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A JOURNAL DEVOTED
 TO BEES
 AND HONEY
 AND HOME
 INTERESTS

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No. 11.



M. AMBROZIC, Moistrana, Austria, has sold 25,905 colonies of bees in the past 13 years.

TO MAKE wooden feeders water-tight, put blotting-paper, when nailing, between the joints.—*Lpz. Bztg.*

HANNEMAN, inventor of perforated zinc, now over 80, lives in South America, has 335 colonies of bees, and raises grapes.

REAUER estimates that a strong colony uses 100 pounds of pollen in a year. [This looks like a large amount, but it may be right.—ED.]

BOSNIAN BEES are the latest candidates for public favor. Of course they excel; stingless, and work more hours than any other bee, besides being the hardiest.

APPRECIATIVE NOTICES of considerable length have lately been general in foreign bee-journals touching Root's A B C of Bee Culture, and the wish has been expressed that it might be translated into other than the English language.

THE BIG-LITTLE-HIVE controversy that has been running in American bee-journals has been summed in a masterly manner—where do you think? In the German *Bienenzucht*, by Dr. Soergel. [But you did not tell us what the summary was.—ED.]

FRIEND A. I. ROOT, I think you misinterpret friend Gressman, p. 407. When he says he'd take all he could get from one cheating him intentionally, he hardly means he would take more than is right, but that he would take all he could get of what rightly belonged to him.

YOU RIGHTLY emphasize stimulative feeding for rearing queens, Mr. Editor, p. 398 but forget to say that nothing is more stimulating than a heavy flow of nectar in the flowers. At such times would feeding be of any use? The swarming season is a good time to rear queens, not because it is the swarming season, but because the bees are stimulated by a big flow.

KEEPEN estimates that the bees of an ordinary colony will visit 2,000,000 flowers in a day, or 200,000,000 in a season. If one tenth this number is fertilized by the bees, and the fertilization of 20,000 flowers is worth 1 cent, then the fertilizing labors of one colony for a season is worth \$10 to agriculture.

IN A PRIVATE LETTER, Thos. Wm. Cowan says: "They have made me president of the Museum Association here at Pacific Grove, Cal., so they do not intend to keep me idle. I am just setting out a botanical garden, and we are going to have a flower show on the plan of those we have in England. It would be too far for you to send exhibits or I would ask you to do so."

TWO MYSTERIES in connection with finding queens. You look very, very carefully all over a comb, and the queen is not to be seen; but suddenly she appears, calmly walking right before your eyes. Where or how she was hidden is the mystery. Another mystery is that often a queen is harder to find in a mere handful of bees than in a strong colony. [I agree with you in both.—ED.]

THE AGE AT MATING of 30 queens is given in *Bienen-Vater*. It varied from 4 to 9 days, the largest number being at 6 days, and the average of all being 6½ days. [I once conducted a series of experiments, and, if I remember correctly, the average date seemed to be 7 days, and the earliest 3 days; but in this case I had reason to suspect the queen had been confined in the cell by the bees after the regular day for hatching.—ED.]

THE INSTRUCTION as to finding queens, p. 396, is very full. The sifting process is good as any in a troublesome case. Here's an additional plan. Put the combs in pairs; after they have stood a minute the queen will be in the middle of one of the pairs. If the pairs are in separate hives, and you let them stand long enough, the bees will become uneasy in each pair but the one containing the queen. [I never tried this plan, but see no reason why it would not work.—ED.]

CULTIVATE in the child a love for flowers. With some there seems a passion for flowers from earliest childhood; others have the taste aroused not till years have passed. Until I

was a man grown I saw no beauty in a flower or a fine sunset. A. I. Root's love for flowers seems to have come much later. God painted with exquisite touches the commonest leaf, painted it for our enjoyment, and he who does not see its beauty should pray that God may open his eyes.

TO PREVENT STINGS, anoint the hands with a mixture of finely powdered naphthaline with twice its weight of melted vaseline.—*Bulletin d'Avesnes*. [If the bees make a sudden onslaught as when the hive is jarred, or something comes loose with a bang, no preparation of any sort will prevent them from stinging; but I have found that carbolic acid reduced 500 times in water, and smeared over the hands, will prevent the bees from *feeling around* to get a good place to sting; but it will do nothing to prevent a sudden dart, and two-thirds of the stings are received from bees that make a shot right at one.—ED.]

PARRER WEYGANDT, in *Imkerschule*, asks whether I am correct in saying in *Bee-keepers' Review* that the finest wax can be got from old combs by treating, a week before melting, in a solution of sulphuric acid. That must have been another of the numerous Miller family, friend Weygandt, who said so; I don't know any thing about it. [Whether you or somebody else was responsible for the statement, there is just a mere shadow of truth in it. The dirtiest kind of wax can be rendered a bright lemon color, beautiful in tint, and aromatic in smell. A solution of sulphuric acid in water raised to about 180 degrees F., will purify every bit of dirty wax.—ED.]

ARE YOU SURE, Mr. Editor, that "bees get but little if any honey" from dandelion? One spring I *shook* (not extracted) out of the combs of one colony one or two pounds of very thin honey or nectar at a time when I thought they were working on nothing but dandelions. Dadant's Langstroth says it yields honey, and I have always supposed it yields much. [Since you raise the question, I am not so sure, doctor; and yet during this spring I watched the bees quite closely on the dandelions that are so thick about my house. They seemed to be getting only pollen; but perhaps they were also taking a little honey. In looking up authorities, I see there are some who claim that bees do get honey from dandelions; but the amount, even then, is admitted to be small.—ED.]

A. D. SHEPARD thinks the time of taking bees out of cellar should have a fresh airing. He suggests that, if the mortality of the last 20 days of confinement is four times as much as the previous mortality, it might be a saving to take out earlier. That depends. The question is not whether the last is so much worse than the first part, but whether it would be better or worse out than in. If perfectly healthy, they may live better by staying in cellar; if troubled with diarrhea it may be a saving to hustle them out. Something depends on weather, *much* on locality. A locality in Wisconsin may have a winter milder on bees than one further south. But a fresh airing of the subject may do no harm. [If this

subject is to be "aired," it had better be aired along next January, then bee-keepers can put the matter to a practical test a little later, when the subject is fresh on their minds.—ED.]

THE EDITOR of *Le Rucher Belge* gives this instructive item: Feb. 19, bees flew in a rain and fell to the ground chilled. After 24 hours, 50 of them carried into a warm room revived in 10 minutes, and flew in 30 minutes. After 48 hours, 30 were picked up, and all but 3 revived. After 72 hours lying on the wet ground, with one night's freezing, 22 were found, and 8 of the 22 flew after 5 hours' warming. [This is a very interesting series of experiments. Some years ago a bee-keeper at the Ohio State convention, held in Columbus, stated that he had some bees that had collected on a window in the wood-shed, had become chilled, and remained in that condition all winter, and that, when it warmed up in the spring, those same bees revived. Of course, we all laughed at him; and while I do not believe for a moment bees will stand a freeze of three months, yet we need not be surprised to learn that they can survive a chill of six days. This might be an interesting experiment for an experiment station to take up.—ED.]



Hot and dry the weather is.
Nectar now is failing;
Bees are hunting all around,
Their short stores bewailing.

BRITISH BEE JOURNAL.

The editor is asked if honey infected with the germs of foul brood is dangerous to the human system. He says it is entirely harmless so far as man is concerned, but death to bees.

A correspondent in Wales reports the first sealed honey April 28. The editor says it was probably from gooseberry-bloom. That seems remarkable for a country lying north of the United States.

Mr. Chas. Benhaligow, in Devon Co., England, had three swarms on Sunday, April 22. To-day, just a month later, none have been reported in Medina, we believe, and yet we are ten degrees south of the place mentioned.

Mr. Walton, writing from Weston, England, April 28, says, "About ten or twelve days ago nature awakened with a rush. Plums, peas, dandelions, gooseberries, currants, etc., are all in full bloom, and the bees are reveling to their hearts' content."

One man in England has been successful in growing hyacinths. Mr. Belderson says, "I certainly wish him every success, for my bees

have been busy early and late on hyacinths. We are looking forward to a good time." Here's a good chance for some one to combine business with pleasure.

In regard to giving to bees combs containing dead bees, the editor says, "Bees will certainly manage to remove dead bees from combs, if given as stated, but how they do it has always been a mystery to us; and it must involve so much time and labor that it is doubtful economy to impose the task upon them if the great majority of the cells are so occupied."

In reply to a question from France as to whether it would be a good plan to join a swarm to an established stock, the editor says, "It is always a risky operation to join swarms to established stocks, and we do not advise it. By far the better and safer plan—if a large harvest is desired—is to unite two or more swarms, and thus make up a very strong colony."

As everybody knows, Queen Victoria has, for the first time in forty years, made a trip over to Ireland. In commemoration of the event a box of one dozen sections of honey from the four provinces of Ireland was presented to her Majesty. The box containing the honey was specially made of Irish bog oak, by the Abbott Bros., with glass sides, and bore on the lid the letters V. R. in a silver shamrock pattern. It is a pity there has not been a little more mutual exchange of honey between those two nations during the last century. By the way, the Queen is just 81 as this is written. Her reign has now extended over a period of 63 years, exceeding by 3 years that of any other English monarch. Every fourth person in the world is one of her subjects.

CANADIAN BEE JOURNAL.

There is to be a congress of bee-keepers in Paris, Sept. 10-12. What a Babel of languages they'll buzz in!

The editor says, "Queen-excluders that have been used on foul-broody colonies are perfectly safe to use on any hive of bees, without any disinfecting." If I am not wrong, disinfecting is strongly recommended by some under such circumstances.

In addition to the need of help in India our Canadian friends now have an additional task on their hands in the work of relieving the destitute and homeless thousands of Hull and Ottawa, so sadly stricken by fire. Unlike India, distance will not prevent the speedy giving of relief to the Canadians by the people of that country and also by those on this side of the border.

Active measures are being taken in Canada to relieve the suffering in India. As the war in Africa is costing England \$1000 a minute, one can not help wishing that that sum could be sent to India in the shape of food rather

than to use it for pumping lead into the Boers. At present the famine in India threatens to become historical, some 700 being reported as dying daily. The pestilence that always follows a famine is more to be dreaded than famine itself. Strange as it may seem, India has probably more money invested in religious edifices than any other nation in the world—single temples there costing more money than can be computed, and so beautiful that words can give no description of them.

The editor says, "The matter of preventing the spraying of fruit-trees when in bloom has been taken hold of with determination by the Ontario B. K. A. executive. Secretary Couse has had posters printed in the name of the Association, containing a copy of the act of Parliament relative thereto. Each member of the Association and affiliated society will be furnished with copies to be displayed in local postoffices, where they may be read by the public." When our Canadian friends make a law they expect it to be observed, and it is; but on this side of the line it depends on circumstances. Canada, I observe, is making astonishing strides in the raising of fruit, especially apples, of superb quality.

AUSTRALASIAN BEE-KEEPER.

In regard to the cause of comb-cappings being discolored, the editor says:

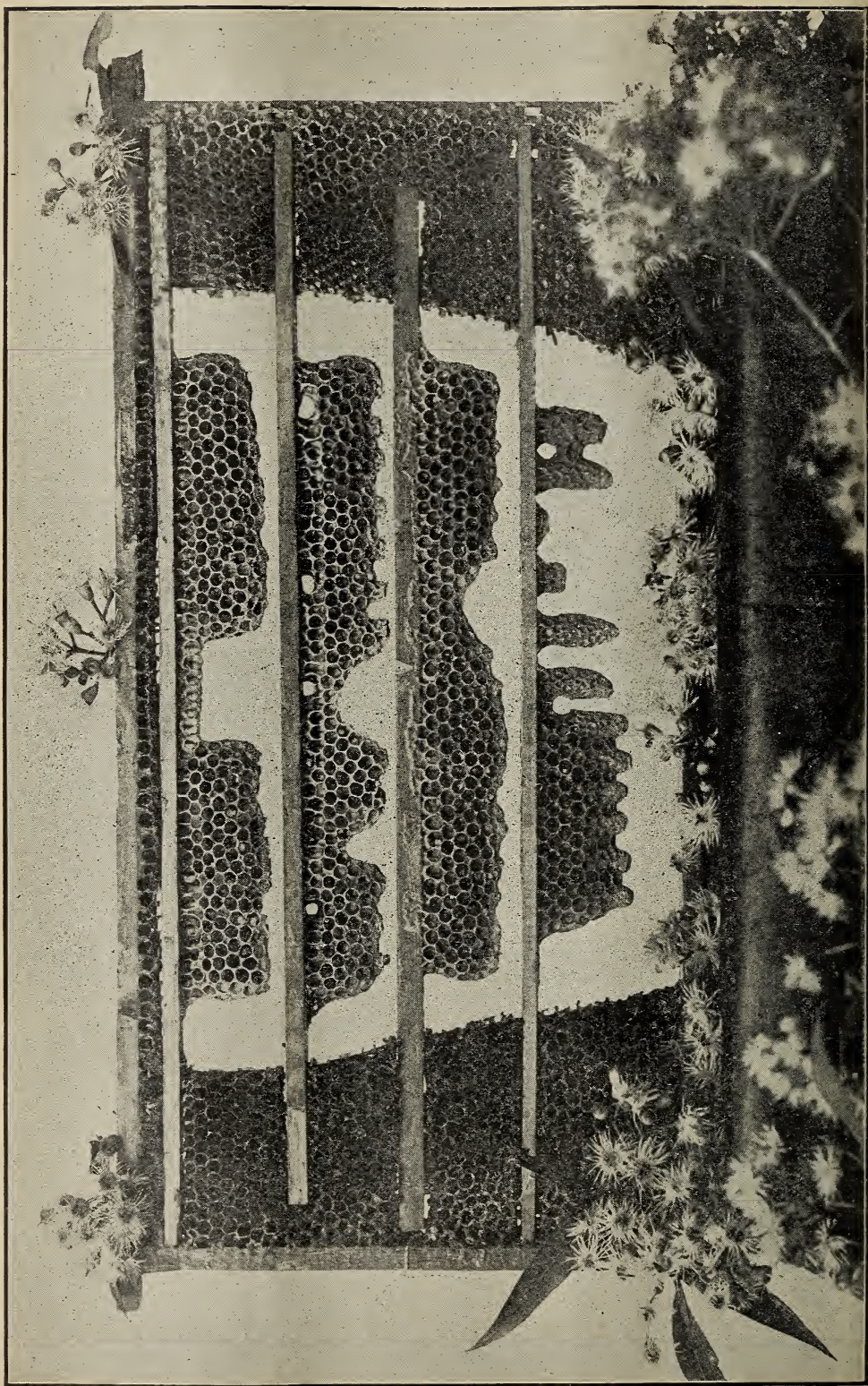
I have always understood the appearance of comb honey is the production of certain strains of bees—the Asiatic varieties tending very much that way. In the same apiaries some colonies produce more or less greasy-looking capping to their comb. The dark races of bees cap their honey with white caps. The goldens do not produce so white a capping as the black bee. The Ligurian produces honey more greasy in appearance, and the Holy Land bees very greasy. Such has been my experience, but in all apiaries of colored bees the capping varies. Is that caused by weather or the strain of bees? Have you ever noticed that sections over the center of the brood have a more greasy appearance than those to one side? What is the cause?

PROGRESSIVE BEE-KEEPER.

Mr. Doolittle attributes the famine in India to the fact that the masses are so plundered there in the full years that they are forced to live habitually at the margin of existence, hence they starve when the food supply falls off somewhat.

AMERICAN BEE JOURNAL.

The necessity of cross-pollination of fruit-bloom is a subject that should never be considered threadbare. Prof. Cook says his sister in California was wondering, in 1891, why her fruit-trees were not bearing as well as usual. The trees bloomed, but the fruit did not set. Mr. Cook suggested a decrease in the number of bees, and accordingly an apiarist was engaged to remove his bees to the place, and at once there was a marked benefit. She has kept the apiary there ever since. She feels that she can afford to pay for the presence of the bees, and she is right. While other insects might help toward pollination, this incident shows that bees are *the* thing for the business, and that in their absence the hope of a good fruit crop rests on a slim foundation.



QUEEN-CRIS FROM DRONE AND WORKER-COMB



DRONE-CELLS VS. DIPPED CUPS.

How to Convert Drone-cells into Queen-cells: Royal Jelly Superior to Ordinary Worker Larval Food.

BY H. L. JONES.

Mr. Editor:—As you are always open to conviction, and ever ready to welcome the truth, even when it conflicts with your own preconceived notions, it is with confidence that I resume the discussion on our different methods of queen-rearing. I work and experiment with bees the whole round of the year, and verify every statement I make, so that I have a big advantage over you with your few months of practical work per year. I want to convince you that you are making an error in claiming so many advantages for dipped cells over drone-comb cells. Both in GLEANINGS and in the new edition of the A B C of Bee Culture you state that we have to put our drone-cups into queenless colonies to get them started; but I will say that we have to do no such thing, although under some conditions we get better results by doing so; and I will further state that, whatever you can do with your dipped cells, we can do with our drone-cups; and I believe a little *better* too.

I have repeatedly tried dipped cells and drone-comb cells in equal numbers on the same stick, and almost invariably got better results from the drone comb. In the accompanying photo of queen-cells, note the bottom row. This contained six cells prepared from drone comb and six dipped cells, and was placed directly in the upper story of a strong colony with a laying queen below. The photo, I think, speaks for itself as to the most desirable and successful method, and it isn't simply a selected case either, but an average result. You claim that the dipped cells are more regular, also less liable to be damaged in handling; but I certainly fail to see either of these advantages; in fact, the photo shows the uniformity of the drone-cells, and how much *better* they are protected. Note how heavily the drone-comb cells are covered with comb incrustation, and the protection this affords. When a warm knife is slipped between these cells, and they are placed between the frames in queenless colonies, flat sides to the combs, they are almost as safe as if inclosed in cell-protectors, as only the extreme points are exposed at all, and I now rarely use cell-protectors with such cells unless in conjunction with spiral cages, when I have a surplus of cells. It may be important to mention that, after I prepare my row of drone-cells, and before inserting the jelly and larvæ, I always insert the end of my leadpencil, which is tapered off a bit, into every second cell, and give it a twirl. This enlarges the top of the cell a little, and gives it the exact appear-

ance of a natural queen-cell, and it doesn't take ten seconds to do ten cells.

ROYAL JELLY AN ADVANTAGE.

Some breeders maintain that royal jelly is not essential when transferring larvæ into cell-cups; but this is altogether contrary to my experience, as I have in almost all cases had a much greater percentage of cells accepted by using a liberal supply of royal jelly. Observe the top row of queen-cells which were raised from drone-cells in a queenless colony. The first seven cells were furnished with royal jelly and larvæ, then four cells were supplied with larvæ only, and the remaining eight cells were again furnished with royal jelly and larvæ. Just note the result. Every cell with jelly was accepted, but not one that had received no jelly, although these latter occupied the most favorable position.

WORKER-CELLS FOR QUEEN-CUPS.

The second batch of cells gives a view of queen-cells constructed from worker-cells, the larvæ being placed in every third cell for convenience in cutting apart. Out of fifteen cells given, twelve have been accepted; but it is not often that I use worker comb for this purpose, and I picture it here just to show where a good substitute can be obtained when no drone comb is available. I should also mention that, in the two upper rows of cells, the queens have all hatched out; and on account of the joints of the cells being removed they do not look quite so long as they otherwise would.

YOUNG V. OLD LARVÆ FOR QUEENS.

On the third row of cells I have been experimenting with young and old larvæ. To the left of the little neck, in the center of the frame, nine cells were grafted with larvæ about twelve hours old; and to the right, nine cells were grafted with larvæ nearly three days old. All the young larvæ were accepted, but only seven of the old larvæ, and these older larvæ were, of course, capped over and hatched out first. If Dr. Miller (Stray Straws, page 825, 1899), had seen these two batches of queens he would soon decide whether to follow the scientist or the practical man. A young larva grows very rapidly, and a three-day-old larva is much larger than any one who has not closely observed imagines. I shall probably have something more to say on this subject later on; but I will say right here that, while it may be all right in theory to raise queens from larvæ approaching three days old, such a course in practice will result in a very inferior class of queens.

In conclusion, friend Root, I will say that none of the above batches of cells were selected from others not so favorable to my line of argument, but the four lots (which are brought together for the convenience of the photographer) were put up under the usual circumstances prevailing in my apiary, and represent an ordinary week's operations.

The blossoms around the frame are from the bloodwood (*Eucalyptus corymbosa*), a large native tree, and a good honey-producer that is now in bloom.

Goodna, Queensland, Aus., Jan. 15.

[Well, now, friend Jones, I do not know that I have any desire to try to convince you that the Doolittle queen-cell cups are better than the drone-cells, as so much depends on what one is *used to*; and while perhaps the majority of queen-breeders in this country use the Doolittle method, yet I find there is a great variation in the use of that method. One prominent queen-breeder tried to convince our Mr. Wardell, our queen-breeder, that his own method was better than Mr. Wardell's. Said Mr. W., "Perhaps his method *is* better; but I know *just how* to work my plan, and I *get good results*. Now, please, Mr. Root, don't ask me to try some new-fangled way that I am not familiar with, and which might not work, when I think my way is good enough, both as to quality and quantity of queens."

I stand corrected as to the matter of getting drone-cells accepted in colonies having queens; and from what experience we have had later, I am convinced that both the drone-cells and the Doolittle cups can be used much in the same way. But now that we are enabled to make Doolittle cups "by the peck," and so easily, it strikes me that for convenience the artificial cups are to be preferred to those made out of drone-comb. But here again I suspect you and I will not quite agree.

As to royal jelly vs. larval food, our own experience is right in line with yours.

Referring to the picture, I am a little afraid some mistake has been made, for your description does not quite tally with the plate. For instance, you ask us to observe "the top row of queen-cells," when for the life of me I can not see any queen cells there, although there is a possibility they are all covered up by the comb. I have gone back and looked up the original photo, and find this plate was taken from the photo you sent us at the time you sent the manuscript. If you sent two pictures, and one failed to arrive, then we shall have to take your word for what you say.

If there is any advantage in having cells covered up with comb to protect them, it is a very easy matter to have the Doolittle artificial cups covered the same way. All that is necessary is to attach them to a piece of worker comb at regular intervals, and they will be almost completely obscured, just as shown in the bottom row at the left side of the cut. You see, friend Jones, drone-cells have no advantage over the artificial cups; and in one important point they lack one important feature; namely, that the cups can be made heavy so as to stand rough usage. Our Doolittle queen-cells can be shoved right bodily into the face of almost any comb without danger of mashing or crushing, and this is a matter of great convenience.

Later.—Since writing the foregoing I have had a talk with our Mr. Wardell, and I was surprised to learn he has lately been trying pieces of drone-comb, and more surprised that he is inclining to the opinion that the drone-comb method may be all right. But there is the one point that the Doolittle cells are stronger, larger, and look more like peanuts. If plenty of room makes good queens, the Doolittle cells offer that advantage.—ED.]

WHAT TO DO WITH SOILED COMBS.

The Advantage of Hiving Swarms on Solid Combs of Honey; How to keep down Grass around Hives; Belgian Hares, etc.

BY F. GREINER.

We had quite an experience a year ago with soiled combs from colonies having died the winter before, and very many bee-keepers are more or less troubled with such combs every year. The question then arises, "What is the best use we can make of these combs?" I have seen it recommended within a short time to give them to young swarms. In my experience I found that to be the worst use I could put them to, and that in the face of the fact that sometimes young swarms will select for their home a hive that had been previously occupied by a colony, and is filled with soiled combs of the very worst character. Many a time have I hived swarms into hives full of comb, and not very bad comb at that; but in by far the most cases the bees would not stay, and could not be made to stay, not even by caging their queen. With me the bees seem to prefer to go back to their old home minus a queen; or if the queen was at liberty the whole company would respectfully bid me good-by. If one really wishes to utilize old combs for his young swarms, as good a way as I know of is to first let them go through a cleaning process on top of a good strong colony; and the more honey is stored in them by that colony, the better the result will be. It will nearly all be carried up into the sections, or used up some way. A young swarm hived on solid combs of honey will astonish the owner in the amount of section honey it will produce. A few soiled combs may be given to a young swarm at a time, after the same is well established in a new home, the same as is admissible or advisable in case of old colonies.

Grass and weeds around bee-hives and walks may be effectually killed by a solution of sulphate of copper—one pound of the chemical to one or two gallons of water. This mixture is poured around hives, etc. I take this recipe from the *National Stockman and Farmer*. Carbolic acid, I find, also answers for this purpose. I do not now remember how strong a solution I used. I found it out accidentally.

Tanbark is also being used for keeping down any vegetable growth about hives and the beeyard. I first saw it recommended in the *Am. Agriculturist* last summer. The picture of an apiary was shown in the *American Bee Journal* a short time ago which looked very neat. The whole yard had been covered with the bark, and the hives were placed thereon. Where tanbark may be had, no doubt it could be used in this fashion to good advantage, although I should be a little afraid of fire. Salt is also used for killing weeds around hives; but if any stock ever finds it out there will be no end of trouble, and much mischief may be done in a little time. I have had some unpleasant experience in that line. No more salt on my—beeyard.

Colonies contracting the swarming fever at

two different times in one season, and sending out swarms, thus having the prime swarm of the second swarming-period led out by a queen of the same year's rearing, is a rather uncommon occurrence, but it will happen occasionally. Two such cases only have come to my notice in 25 years of bee-keeping.

A colony that raises its queen from the egg, or even from a nearly matured cell, at the beginning of the honey season is reasonably insured against casting any swarms during the season, providing the bees kept are natives or Italians. The late (or buckwheat) swarms, or any swarms appearing out of season, generally come from such colonies as are superseding queens.

Speaking about "Belgian hares" (Rambler, p. 211), I wish to say, although it has no bearing upon bee-keeping, that many a poor man or bee-keeper could easily, and with but little cost, raise quite a lot of a very good quality of meat for his own table by going into this industry in a small way. A small number of these animals may be grown without any cost, for all kinds of weeds, and refuse vegetables from the kitchen, can be made to serve as food for them. Children will oftentimes enjoy feeding them, and could take nearly all the care of them. The grass, weeds, and bushes growing along the highway in many places could be turned to very good use in growing Belgian hares. I grew them 25 years ago. One night dogs broke into the building and killed my whole flock of thirty or more. Late years I have again purchased stock, and grow it. Our table has been abundantly supplied with their meat for some time. From three months upward they will do to use. In fact, these young things make excellent broilers, and many epicures are beginning to find out their value. I find that, from three breeding does, I can grow as many young as and perhaps more than we can well utilize in our own home. If I cared to engage extensively in the growing of hares I could find a market at good prices for all I could raise. Sometimes I have thought I would go into it and drop the growing of capons, for it requires much more labor to grow the latter than the former, and the cost is a great deal more in proportion to the profits.

Naples, N. Y., April 16.

[The sulphate-of-copper solution, I have no doubt, will do the work very thoroughly; but will it do it as cheaply as an application of salt? It is our practice to buy a barrel of common rock salt, which is sufficient to take care of an apiary of 300 or 400 colonies for two or three years. Once or twice a year we sprinkle a very little salt around each entrance. Very often one application each year will answer provided there are not too many rains, so as to start up the grass again.

What you say about Belgian hares interested me greatly, especially as the Rambler and others have stated that this industry can be nicely combined with bee-keeping. A few days ago there came into my hands a pamphlet entitled "Belgian-hare Breeding," a practical treatise by J. W. Darrow, price 25 cents, pub-

lished by the *Fancier's Review*, Chatham, N. Y. When I was in Colorado I saw several pens of these mammoth hares, about as large as a good-sized dog, and as gentle as kittens.

So far as I could learn, the industry was a profitable one, and the meat of the very finest. Indeed, it is claimed that it is very rich and juicy, with none of the greasiness of that from the ordinary barnyard fowl, and none of the "wild" taste of common wild rabbits or hares. It is also stated that it can be eaten by invalids and those with weak powers of digestion. Who knows but here is a panacea for those who feel the need of a meat food, and yet, perhaps, can not afford to buy steak at 12 or 14 cts., and in some localities 25 and 30 cts.?

One doe, according to the pamphlet referred to above, produces generally from six to twelve young at a litter, and from five to six litters during the year. On the average, one mother, it is stated, can produce as many as 40 hares in a season. Half of the first litter, the author assumes, will be does; and the offspring of these will bring the number up to 136—all this from one mother. It is variously estimated that from \$300 to \$400 can be made from a trio of three hares—two does and one buck—in one year, and the author pertinently asks, "Where are your cows that will do this? If you think this is exaggerated, show these figures to some breeder, and ask him to express his opinion."

Belgian hares of pure stock are quite expensive; but common stock can be bought for \$1.00 each, and that is the price they sell at in the market for meat. It is also estimated that the price secured for the pelts pays for the feed; but, as friend Greiner points out, the food very often costs nothing when the hares are reared in a small way for family use.

I must confess that I know absolutely nothing about this industry, and the figures above given may be greatly overdrawn. I should be glad to hear from some of our subscribers, especially friend Greiner, in regard to the feasibility of growing Belgian hares along with producing honey. Let us have careful, accurate estimates of what has been done, and whether or not there are no disadvantages. For example, will these animals gnaw the bark of young trees in early spring when vegetation is scarce? and are they subject to disease?

Rabbits and hares are much cleaner in their habits than chickens, and, barring the possible danger of gnawing young trees, they would be much pleasanter to keep, and possibly much more profitable.

I have been satisfied for years that there are only a very few who can make bee-keeping a specialty. The great majority should run some other business in connection with it. Some have said that the growing of Belgian hares interferes as little with bee-keeping as any business. Let us have all the facts so our bee-keeping friends can be benefited. If one can add \$200 or \$300 to his annual income without very much outlay, and at the same time supply the family with one of the most delicious of meats, it will be quite a big item.

—Ed.]

ANTS AROUND THE BEE-HIVES; HOW TO EXTERMINATE THEM.

Mr. Abbott, and his Views on the Pure-food Bill Criticised.

BY E. H. SCHAEFFLE.

As a number of your subscribers seem to be troubled with ants, my experience with them may be of service to some. I think I have thrashed this same straw in the past. I once purchased a lot of bees that the owner assured me he would brimstone unless I bought them, as they drove him off his place. On examining them I found one of the stands had half of its combs filled with the large black wood ants. As the combs were "fixed and immovable" I turned the hive upside down, dusted Persian insect-powder freely among the ants, and then closed the hive for a few minutes, when I reversed it, and in a few minutes had the pleasure of seeing the bees carrying out the dead ants. I had no further trouble with that stand. I irrigate the ground on which my hives stand, and in consequence the ants are driven to the hives. They never enter the combs, but seek the spaces between the sections where the bees can not reach or glue them out. I have tried placing a ridge of insect-powder around the hive. While the bees do not seem to be affected by it, the ants avoid it for several days until it has lost its strength, when they remove it. A chalk-mark will prevent the passage of ants as effectually as a barb-wire fence will cattle; but the ants will remove the chalk, a particle at a time, until they have a passage through it, just as rats will pack glass, when placed in their holes, till it is all removed.

The best way to exterminate ants is to make a mixture of arsenic, Paris green, London purple, or strychnine, with syrup or honey. Put this in a dish, and the dish in a box, with the ends covered with wire-screen cloth that will admit ants but exclude all bees. Place this box on the trail of the ants, and they will carry the poison home, feed it to their young, eat it themselves, and soon the colony will be among the things that were.

It is almost incredible, the number of ants in a strong colony. I once employed a wood-chopper who came to me stating, "I have cut a tree down, but the ants have run me out." I examined the tree, and found it hollow. Ants were pouring out of the base in a solid stream, like bees swarming. Near the stump they were piled an inch deep, while a circle 20 feet in diameter gradually widened out as the ants migrated. The ant, like the snapping-turtle and the bulldog, holds on, and seems to wear the bee out by its tenacious hold.

GREASY SECTIONS.

Greasy sections with me are caused by a want of ventilation and excessive heat. Place a strong colony out in the heat of the sun, on a very hot day; partially close the entrance, and the cappings on the combs will soften, flatten down, absorb honey, and have a greasy appearance. I think if you were to place a section of comb honey in a warm oven you

would get the same results, without reference to the queen or bees.

THE BROSIUS PURE-FOOD BILL.

I have received Mr. Abbott's paper containing my letter on the Brosius bill, and his reply. According to Mr. Abbott, the manufacturers of glucose, oleomargarine, embalmed beef, etc., have a perfect right to manufacture and sell the same "as such," and should be restrained only when they sell their products as the genuine article. This is on the line with the argument, "If I don't sell whisky, some one else will, so I may as well sell it." Glucose contains a large amount of sulphuric acid — so much in the commercial article that its use can not be other than injurious. Oleomargarine has been shown to contain paraffine, a mineral product that is certainly not a food, and is injurious to health. The embalmed-beef scandal is so recent that it is not necessary to review it. I contend that the manufacture and sale of any of these articles, *as food*, should be stopped. Mr. Abbott's apology for the manufacture and sale of these articles is lame. As it now stands, manufacturers snap their fingers at the laws, and proceed to make and sell their imitations. With their great wealth, political influence, and the indifference of the public, they are as free and safe as though no laws against the manufacture of their products had ever been passed. Now, I believe "self-preservation is the first law of nature;" and if we can have a law passed similar to that of the flour-millers, and proposed by the maple-sugar makers, to place a stamp on each package containing glucose when sold as honey, showing that it is a mixture, and not pure honey, the adulteration of honey with glucose will be stopped. No one will buy glucose as honey if he knows it is not honey.

We have, as I presume most States have, strict laws against the adulteration of honey, sale of oleomargarine as butter, and short-weight butter, in California; but I can buy oleomargarine as butter, in short-weight rolls, and glucose as honey, in any crossroads grocery. The trusts say, "What are you going to do about it?" When men like Mr. Abbott will act as apologists for its existence we may well ask, "What are we going to do about it, the canteen and every other trust?" The time is here when the people must speak, and that in no mild tones. If the voice of the people is the voice of God, then it should be heard, and the tones should be so loud that all should hear them. I can only repeat what I have written before, "The only way to protect honey from adulteration with glucose is to require that each and every package containing a mixture of honey with glucose shall bear an internal-revenue stamp, showing that the contents of the package are a mixture of glucose. The tax need not exceed a cent on each and every package. What we want is the stamp *in plain evidence*. If we are to depend upon men like Mr. Abbott, we shall never see it there.

Murphy's, Cal., March 8.

[It has been our practice to recommend hunting up the ants' nests, and destroying

them, the source of all the trouble; but in California this may not be practicable, and, moreover, the nest may be inaccessible, or, to coin a word, not "findable." Certain red ants, very small ones, in this country have a fashion of making a way into the pantries of the housewives; and it is sometimes very difficult if not impossible to find their nests. Giving them a mixture of syrup and any one of the poisons you name, would probably "fix 'em"—the visitors as well as their baby brothers and sisters. It would be well worth trying, anyhow.

I said it was our recommendation to find the nest and destroy it. With a crowbar or sharp stick make two or three holes; and if the nest is a large one make three or four through the nest about a foot deep. Into each hole pour about a tablespoonful of bisulphide of carbon, then stop each hole with a plug of earth. In a day or two, not only the ants but the nest, including all the eggs and larvæ, will be "fixed" so they will do no more harm.

Hearing recently that gasoline and coal oil would answer in place of the dangerous bisulphide of carbon,—dangerous because it is so explosive—I lately tried several nests, making holes in them, but using larger quantities of coal oil in some cases and gasoline in others. Either liquid I found would destroy the nest, but not so quickly and perhaps not so surely as the bisulphide. If the holes are made a foot deep, and three or four tablespoonfuls of kerosene are put in each hole, the grass probably will not be killed. But if any of the liquids are spilled or poured on top of the nest the grass will be killed, leaving a great brown spot.

With regard to pure-food legislation, while I partly agree with it strikes me that Mr. Abbott's method, or the plan recommended by the pure-food congress that recently met in Washington to do away with the adulterations in food, is much more practicable. We should all be very glad if the making of glucose could be prohibited absolutely. If it is used for any honest purpose, and if it is ever sold for what it is, in a retail way, then I should like to know when and where; but if we would destroy an evil, we can not always do it with one fell swoop. To attempt to prohibit its manufacture at this stage of the fight would delay legislation for years to come, as the makers of it with their millions could put up a powerful lobby that would probably kill any bill calculated to annihilate their interests.

It is much more feasible at present to pass a law that will prevent the selling of certain food stuffs except under their real names. If the bottle or package containing glucose must be labeled "glucose," there will be little demand for the article, because consumers, if they knew what they were buying, would let it alone.

Do not, for the sake of pure food just now, attempt to throw cold water on the intelligent efforts that have already been put forth. *Let us take what we can get rather than try to get too much and get nothing.*

Your scheme of requiring that a government stamp should be placed on all glucose mix-

tures may be all right; if so, its advocacy comes too late. Better get behind and push the ball that has already started to rolling.

If I could have my way I would have alcohol in every form wiped off the face of the earth. True, it has some legitimate and proper uses in the arts; but so far as I am concerned I could easily forego its legitimate use for the sake of forestalling absolutely the awful abuses of it; but experience teaches us that the only way to fight a gigantic evil of this kind is to cripple and curtail it little by little here and there in various ways.—ED.]

THINGS WORTH KNOWING.

Modern Appliances vs. Old.

BY MRS. A. J. BARBER.

Since the beginning of the new year I have been looking back over the nine years that I have been with the bees, and taking stock, so to speak, of the points that I have proved to my own satisfaction. I have been in the bee-business, first, because it was necessary that I should have some money-making business that I could attend to while caring for my home and family; and, second, because I loved the work, and felt sure that I could do better in it than any thing else that would not require more capital to begin with.

In the nine years I have never had a failure. Last year was a short crop. There was a long drouth, and water failed for irrigation. We had not quite 9000 lbs. of both comb and extracted honey from 130 colonies, spring count.

Now, the points that I have proved to myself are these:

That careful, patient work and management are essential to success.

That comb and extracted honey can be produced with profit from the same apiary at the same time.

That the wax and vinegar may be made to pay the cash expenses of such an apiary.

That with the exercise of a little ingenuity and forethought two apiaries of from 150 to 200 colonies of bees can be managed by a woman and a little boy, with but very little other help except in hive-making or nailing up fixtures.

That one who makes a business of bee-keeping should take all the best bee-papers and keep up with the times.

That the person who depends on luck generally has bad luck.

I have proved, in an experience of six years as inspector of bees for this county, that the treatment of foul brood can not be made too thorough, and that the best use to make of honey from infected colonies is to burn it or bury it very deeply.

I have also settled the hive question, for myself at least. The eight-frame Dovetailed is my choice. I have followed the Roots, and have adopted all their improvements but the new supers and plain sections. I am still using the supers, sections, and section-holders that were the latest thing in 1890, when I began bee-keeping.

I have not a fault to find with them since I tried the new super springs and the new slotted separators on 100 supers last year. I liked them so well that I have forgiven the Root Co. for shortening the end-bars of the Hoffman frames, and have ordered enough springs and separators to fit up 400 supers. After all, though, the short end-bars are all right in the Root hives. I have had trouble with them, however, in home-made hives, especially when the "boss" didn't get the exact measurement and got some of the hives a trifle too long. I have not tried the new plain section yet, but I do like the new slatted separators to be used with the old-style sections, and I believe the fences and plain sections must be fine. When one is fitted with an outfit for the old style for 200 colonies he can afford to wait a little before changing so many super fixtures.

There may be a few other things that I have learned, but I don't happen to think of them now. The first year or two that I kept bees I could have written several large books; but after a few years of hard work and dearly bought experience I can put all my knowledge into a few pages.

Mancos, Col., Jan. 8.

CHEMICAL IMPREGNATION OF EGGS QUESTIONED.

Germ and Sperm Cells.

BY A. J. COOK.

Dear Mr. Root:—As I am waiting here at the opening of a farmers' institute I answer your inquiry regarding Mr. Crane's reference to chemical impregnation of eggs. I have seen the report that Prof. Loeb, of Chicago University, has caused the eggs of a sea-urchin, which have never known the presence of sperm-cells, to develop by adding magnesium. This needs confirmation, and I await further evidence. I do not feel that the news will necessarily be revolutionary, even if authentically confirmed. The egg is a cell; likewise the spermatozoan is a cell. So we designate them as the germ and sperm cells. Usually the nucleus of each, or parts of these, unite and become one before development takes place. The lowest branch of animals—*Protozoa*—consist of a single cell, and so are essentially like the egg or sperm cell. They reproduce, as you well know, by division, just as the egg divides in the morula stage. Often two of these animals unite for a time preceding reproduction. This temporary union, as you know, we call conjugation. In this process, which we see is not always precedent to reproduction, but which often occurs, doubtless interchange of protoplasm occurs. This doubtless stimulates vigor and the reproductive act. Every bee-keeper conversant with the Dzierzon theory knows that, while most eggs require that the sperm-cell shall enter the egg, and its nucleus become massed with the pro-nucleus of the egg, to insure development, this is not true of eggs that are to produce drones. In this and all cases of parthenogenesis, or agamic reproduction, eggs develop

without presence or vitalizing aid of the sperm-cell. Now, if these reports are true, and I will not question them until I have reason, then this is a case of parthenogenesis. If, as reported, the magnesium helps the development, or is necessary to stimulate its action, we may not wonder. Environment often starts growth, or excites new vigor. If we wound a tree, adventitious buds start or develop. May not magnesium be the irritant which causes the egg to divide or develop? Surely if a bee's eggs may develop with no external stimulation, we may not wonder overmuch if the sea-urchin egg may develop by some exciting cause, and that a chemical, like magnesium, may stimulate such unusual action.

Perris, Cal., Apr. 23.

[The suggestion about parthenogenesis (life from one parent) is very reasonable, and may account for Prof. Loeb's experiments. While I am not a scientist, my old professor of zoology used to say that science could perform wonders, but that it could not develop the principle of life, even in the remotest sense; and that man, with all his endowments, could not do what the Almighty had foreordained for himself.]

Prof. Cook is not so "flat-footed" on this question as I had expected he would be; and yet, in spite of the "professional courtesy" (which, of course, is proper toward a brother-scientist), he shows very plainly that he does not believe even a little bit in the implied assumptions concerning the new discovery of Prof. Loeb.—ED.]

IMPROVING STRAINS BY SELECTIONS IN BREEDING; SOME OF MR. CRANE'S STATEMENTS QUESTIONED.

In Mr. Crane's article, page 256, he makes some statements which I wish to question. Sea-island cotton is a variety of cotton grown on the sea-coast. If the seed is taken up country, and planted, in a short time (two or three seasons) it becomes short staple again. Cotton is not an annual, but is perennial, ripening seed the first year, and is *not hardy*, so that in this country it must be planted every year.

The *New York Journal*, in one of its Sunday editions, stated that Prof. Loeb had been able, not to make unfertilized fish-spawn hatch, but that he had made one of the lowest forms of marine life develop life; this was embellished with all the words and fancies which this paper is capable of.

The *Standard Dictionary* says, "The carrot is any plant of the genus *Daucus*, especially any cultivated variety of *Daucus carota*, L., a biennial which in the wild state is a widely naturalized, noxious weed with a white root." Gray's *Manual of Botany* says, "*Daucus Carota*, L., biennial." What Vilmorin did do was to change the form of the root by selection.

I do not think Mr. Crane needs to twist the facts, for he has in selection all that is needed to give him grounds for argument. I firmly believe that a strain of bees in which the swarming instinct will be *latent* is one of the

things bee-keepers will soon be able to produce.

I must say that the incubating instinct has not been *eradicated* at all in any variety of gallinaceous birds, for I can produce a strain of sitting fowls in a few years from any non-sitting variety Mr. Crane may select, thus showing that the instinct is latent, not eradicated.

We can modify bad traits and intensify good ones by proper handling, and do not need more than this to give us all we desire in this line.

In conclusion, I wish to thank Mr. Crane for his able article, and, with the exceptions noted above, wish him to count me on his side.

L. F. HIORNS.

Scranton, Pa.

SELLING HONEY.

Maintaining the Present Prices.

BY E. B. FOSTER.

During the past season I was very forcibly brought to realize the urgent necessity of a "trust" in my locality—I mean a "bee-keepers' trust," so in anticipation of the coming honey harvest I have written a letter to each leading bee-keeper residing in my neighborhood. After doing so it struck me as being an idea that might be beneficial to the fraternity at large. So I give the aforesaid letter to the readers of GLEANINGS. The following is the letter, which I shortened as circumstances would permit. The letter explains itself.

Mr. Bee-keeper :—I take this means of laying before you a matter of much importance and interest to you, which I trust you will carefully consider. The present indications are such that we can look for some surplus honey this season. Now, the vital question that confronts us will be the converting of that honey into the largest possible amount of cash. You no doubt have observed the steady advance in price of nearly all articles we consumers have to buy; you are also aware that the honey quotations rule about 20 per cent higher than last year. Why not maintain the present price of honey by combining our interests and holding out for the advanced price, thereby causing that which we have to sell to compare favorably in price with that which we have to buy. The only way we can accomplish the desired result is not to sell our honey for less than the present price, and prevail upon our neighboring bee-keepers to do likewise. As an illustration: A farmer bee-keeper, a year ago, had some dark and travel-stained comb honey which he disposed of at a price that enabled the grocer to whom he sold it to put a glaring advertisement in the local paper, "New comb honey, 8c per lb." That "8 cts. per lb." was a criterion the rest of the season. Every customer whom you told that you were asking 15c per 1-lb. section would say, "Why, I can buy honey at the grocery store for 8c." You know the result. While you were not asking more for your fancy white article in nice clean sections than it was worth, you were compelled, nevertheless, to lower your price to meet the values created by that one inferior batch of honey that some thoughtless or ignorant keeper of bees had placed on the market. Our customers do not realize the difference in honey as they do the difference in price.

Now, if some of the neighbor bee-keepers had called upon the above gentleman and explained to him the harm that would result from his cheap honey, he no doubt could have been influenced to either use the honey him-

self or dispose of it to some private person who would not have advertised the fact that *there was honey selling for 8 cts. per lb.*; or we could have gone together and bought his crop of honey, and used it to feed our bees. We should be on the lookout for those short-sighted bee-keepers; and when they are ready to sell their crop of honey we should see that they put it in marketable shape, and that they demand a price for it that is consistent with the best interests of the bee-keeping fraternity. It would be better if all bees belonging to these slovenly keepers could be confiscated and placed in the possession of an owner who takes pride, not only in the bees, but in their product. It would then not be necessary for the producers of fancy honey to compete with a grade of comb honey which the grocer can buy for 5 and 6 cts. per lb., and retail at 8. The average consumer has the idea that the bee-keeper can sell honey cheaper than the storekeeper; and when the bee-keeper asks a few cents per pound more, they have a grievance which no amount of diplomacy, argument, or proofs can satisfy. The only chance the bee-keeper has for "squaring" himself is by compromising on a reduction in the price of his honey. The general run of consumers think one cent on a pound of honey ought to make a big difference in the quality of the same; and when there is honey selling for 8 cts. per lb. they believe that 9 cts. ought to purchase a pound of the best honey the market affords.

I have found it difficult to sell honey to consumers for more than what it was retailing for at the store. We must also see our grocer and have him co-operate with us if we expect to attain the very best results in keeping up the price of honey. The grocer can lend us much material aid in the maintenance of present prices.

Allow me again to mention the prime necessity of united action on our part as leading bee-keepers. It is to our own personal interest to do all we can to uphold the present prices of honey. Call on your neighbor bee-owners, and "talk it over" with them; show them what a great figure they can cut in bettering the condition of the poor deserving bee-keepers of our land; work on their sympathies if you can not gain the desired result any other way. Those whom you can not see personally, write to; do all in your power to prevent the marketing of cheap honey. It is that cheap poor honey that ruins our local market for the fancy article. What is a little work or a few postage-stamps as compared with only one cent more per pound for our honey crop? Let each bee-keeper resolve himself into a committee of one, with the ostensible purpose of maintaining the present price of honey in his local market. The good results will soon become general. Our endeavors to better the price of our commodity are perfectly legitimate, and should be indorsed by every person who has honorable convictions—especially so at the present time, when the price of every thing else has grown stronger.

Oceola, O.



DESIRABLE TRAITS IN BEES.

It was March, and one of those boisterous days that are likely to come at this season. I sometimes think our State in March is the battle-ground for the Titanic forces of winter and spring which fight here like demons to see which shall have the supremacy. Spring usually wins in the struggle, but only after many a hard-fought battle. No one wished to face the storm, and one after another dropped into my shop. Fasset brought his wife's second cousin, Charley Atkins, and even Jonas Jenkins came in to warm himself. Poor man! I felt sorry for him, he looked so forlorn. I had my work pretty well up, and we talked of sections and supers and separators till Fasset remarked, "I thought, Lisha, you were going to tell us more about how to get a breed of non-swarming bees. If it takes as long to produce a breed as it does for you to tell how, we may none of us live long enough to see them."

They all laughed a little and I began.

"We were speaking the other day of the different instincts of bees, and decided that that of propolis-gathering with improved hives was no longer needed, and should be bred out. There is another instinct that, while I do not think it desirable to breed out, should be so modified as to eliminate its more objectionable features, and that is the instinct of defending their stores. Our bees, if possible, should be gentle, or at least so as to be handled with little danger of stings. Then there is the brood-rearing instinct. This should be developed to the utmost, especially in early spring. Other things being equal, our success will depend largely on our ability to get a large amount of brood started as soon as the weather will admit in spring. And now we have the honey-gathering and the swarming instincts, and these are contrary one to the other. You know we have appetites and desires in our own natures that are contrary."

"That is so," said the deacon. "If I know my own heart, I want to do what is right; but sometimes my temper gets the better of me, and I say and do things I ought not."

"I fear we all do," said I, trying to comfort him. "You know St. Paul said, 'What I do, that I hate;' and I have wished the bees had the instinct of honey-gathering strong enough to keep them right in the line of storing honey, but they haven't. In hundreds of instances, and I don't know but thousands, the first indications of swarming will be a weakening of the honey-gathering instinct, and the swarming instinct becoming stronger, until almost every bee in the hive will leave, without a tear, the brood they have nursed so tenderly and the honey they have stored so laboriously, and away they go as merry as a

marriage-bell, leaving it all for ever behind them."

"It's curious," said Fasset.

"Yes, it is curious, and provoking too," said I. "Just when you get a colony nicely at work in the sections to have them round them up or cap them off half finished, and then swarm! And if you place the swarm in a new hive without foundation or old combs, or with them, by the time they are again ready to store in the super the flowers are drying up, and you have your labor for your pains. This is not the case with every colony or in every season, but far too often. And then there is the loss of time in preparing to swarm. I suppose hundreds of non-swarming hives and devices have been invented, and many of them patented, to prevent just this state of things; but so far the most or all of them have proved a delusion and a snare."

"But what are you going to do about it?" inquired Charley Atkins.

"Just this," I replied. "I am going to develop the honey-gathering and comb-building instincts to the utmost by using only queens for queen-rearing from the best honey-producing stocks, selecting from year to year with the utmost care; and then I am going to stunt, dwarf, and make abortive the swarming instinct in every possible way, especially by using for rearing my queens only queens with weakened swarming instincts. I tell you, my friends, it can be done. Even colonies with the normal swarming instinct can be kept very largely from swarming by stimulating to the utmost their honey-gathering instinct. Many years ago I constructed quite a large number of hives, rather tall, long, and quite narrow, and when clover came I placed a large number of boxes on each side, and, if strong, on top also. The hives being very narrow stimulated the bees to build out at the sides, and store with honey; and bees in such hives did not swarm half as much as in the ordinary Langstroth hive. I should have kept on using them, but they were not adapted to sections, so I changed. This I conceive to be the real reason why the free use of the extractor prevents swarming. It stimulates honey gathering to the utmost, and the swarming instinct is overbalanced and almost obliterated. It would not be surprising if our best non-swarming strains were to come from bees that have long been run for extracted honey. I was talking not long ago with one of the most enterprising bee-keepers of our State, who has hundreds of colonies. He told how he had bought queens from a number of queen-breeders. Some had been quite worthless, while others were valuable. From one breeder he thought he had the best working bees in his yards. He had introduced several of these queens, which had proved the most industrious bees he had. 'How about swarming?' I inquired. He said he had never, if I remember rightly, had a hive of these bees swarm. I wrote to the breeder in regard to them. He wrote me that these queens were bred from his famous honey-queen, now two years old, etc. This shows how that, even in storing honey in sections, the honey-gathering and

comb-building instincts may overshadow the swarming propensity. One more illustration.

"In the January 1st issue of GLEANINGS, page 12, is an article by J. F. McIntyre to which I would call your attention. Mr. M. is known from Boston to the Golden Gate, and from Manitoba to the Gulf, as one of the most extensive bee-keepers on the Pacific slope, and his word I believe above reproach. The article referred to shows his candor. He says he has a strain of bees that have shown marked superiority for several years, far surpassing in honey-gathering all other strains of bees among hundreds of colonies. He has kept breeding from the best."

"How about swarming?" inquired Deacon Strong.

"I will quote his own words. He says, 'This strain does not swarm half as much as any other strain in my apiary.'"

save me what it would cost to keep 100 colonies, which would be 6000 or 7000 lbs. of honey yearly, which could be sold for enough to net me \$500 or more above all expense. And then I should be saved the labor of caring for 100 colonies. With 500 colonies of hybrids I should have in a good year, say, 475 colonies that would try to swarm; while with this better strain, probably not over 200 colonies would have prepared to swarm—a saving in labor more easily imagined than described.

"But another and most important fact is this: If breeding bees for productiveness of honey alone has, in a few years, reduced the disposition to swarm a half, is it at all doubtful what the result will be if he keeps on with an eye to non swarming as well? Indeed, I consider the problem as good as settled, although the complete accomplishment may be a little delayed."



"WE TALKED SECTIONS, SUPERS, AND SEPARATORS."

"Then," said the deacon, "I don't see but he has a non-swarming breed of bees half formed already."

"Hurrah for the nucleus of a new breed of non-swarming bees," said Charley Atkins; and he lifted his hat as if to salute it.

"A breed in the pupa state," said Fasset, with a preceptible brightening of his eyes.

"I don't care how you put it, or what you call it. It is something any way, and something in the right direction," said I.

"Probably it is not even new, but it has been recognized, and that means a good deal. Probably there are many strains just as good in this country, if we only knew where to look for them. The discovery of these facts has given me great pleasure. See what it means to me. I keep 500 colonies to gather the honey in the range or fields that I occupy. With such bees, 400 colonies would gather it just as well, and

"Is there any thing parallel to this in nature?" asked Deacon Strong.

"Not exactly, so far as I know," I replied.

"There are, however, different ways of directing vital energy. We have spoken of that of fowls. They may expend their energy in incubating and the rearing of chickens, or egg-laying. A cow, if not in milk, may lay a large amount of fat on her ribs and between her muscles; or if in milk, a large amount of vitality may be spent in producing that useful fluid. A single cow has been known in this country to produce more than a thousand pounds of butter in a single year; but these are not exactly analogous to diverting the vitality of a colony of bees from establishing new colonies into the production of surplus honey, but useful as side-lights."

The mention of cows set Esquire Fullam to thinking and talking.

"Yes," said he, "that is so. There was Signal's Lilly Flag that produced 1047 lbs. in a twelve month. We have not been slow to see the value of improved dairy stock here in our State, and, too, we have the proud distinction of knowing to-day that the yield of butter per cow here is larger than in any other State in the Union. We raise more corn to the acre, too, and more maple sugar to the tree. Yes, sir; not another State produces so much maple sugar as ours. Our mountain forests and mountain pastures and river bottoms are the glory and—" but the excessively exhilarating effects of our air set him to coughing, and he subsided, and we shall never know the rest, as at this moment Johnnie Fasset and his sister came in to call their father to dinner.

We had been so busy talking and discussing the deep problems of bee culture that none of us had noticed how fast the time had fled, or that the sky had cleared and the wind had quieted and the snow was melting about the shop door. Johnnie was seven and his sister four years old—bright and fair.

"Them's beautiful children," said Jonas Jenkins. "They sort o' lift one's thoughts up like."

"Of such is the kingdom of heaven," said Deacon Strong.

"I must tell you what I saw last spring," said I. "It was Sunday evening. I was going by Fasset's on my way to prayer-meeting, and the children were out under an apple-tree just in bloom. Johnnie was in a hammock, and his sister was sitting near by in an old rocking-chair, curling dandelion stems, and they were playing Sunday-school. As I passed I heard him ask her, 'What will become of good folks when they die?' 'They will all go to heaven,' she replied. 'And what will become of bad folks when they die?' he again questioned. 'They will all be spanked,' she answered thoughtfully."



DRONE COMB.

On my way home from the out-apiary last evening I met Mr. Charles Brown, a man who has kept bees in a small way for some years, and who is now about to establish quite an apiary by taking bees on shares, and making hives for another bee-keeper, trading the hives for bees, the apiary to be located a short mile and a half from me. Among other things we talked about was that of having too much drone comb built by the bees; and as this drone-comb problem is one that confronts many a beginner, I will give something of our conversation, as nearly as I can remember it. Mr. B. does not feel like buying much comb foundation, and wishes to get his hives filled with worker combs without the use of it, so "fires" at me this question first.

"What makes bees build so much drone comb, any way?"

"All observing apiarists know that, as the day of swarming draws near, the queen ceases her prolificness, so as to be able to fly and go with the swarm, so that, when swarming occurs, said queen is scarcely larger than a virgin queen. Nature has so ordained things for two reasons; the first of which is, that the queen may fly; for, if taken from the hive or colony when no such preparation has been made, she can not fly at all, as she is so heavy with eggs."

"Yes, I know that to be a fact; for only to-day, in trying to catch a queen to clip her wing, I was so nervous that I got clumsy, and knocked the queen off the comb. I expected to see her fly away; but, instead, she, trying to fly, sank down to the ground. She made two or three more efforts to fly, but could not rise, so I held the comb of bees down and she ran on it, when I finally succeeded in getting her and clipping her wing. But what about the second reason?"

"The second reason is that the queen need not be damaged by an over-accumulation of eggs before there is time for the bees to construct combs in their new home for her to deposit eggs in. For these reasons we find that all good queens do not become fully prolific again until about a week has elapsed after any swarm is established in its new home."

"Well, what has all this to do with the building of drone comb?"

"During this week comb has been built rapidly, especially if honey is coming in plentifully; while, for the reasons given, the queen has not been able to keep up with the workers in filling the comb built with eggs, the result of which is that the bees commence to build store comb, which is of the drone size of cell."

"But when filled with honey there can be no drones reared in it!"

"Correct; but the trouble comes the next spring when the combs are emptied of honey. Only a year or two ago I saw hives in a neighboring apiary nearly half filled with drone comb where good laying queens went out and were hived with the swarms."

"Why do you bring in that 'good laying' part?"

"Because some seem to think that no drone comb is built under any circumstances unless the queen is old or beginning to fail. By inquiry I found that the swarms were hived a full week before the surplus arrangement was put on, this making it necessary for the bees to do all their work in the hive during the time before the queen could get back to her full prolificness again. In these reasons I have given what causes the bees to build drone comb for the majority of bee-keepers."

"But how is such a state of affairs to be avoided?"

"The way I manage is to give new swarms which are to build comb, a brood-chamber of only about half the size of the one from which the swarm came, this smaller size being made by contracting it with dummies, while a part of the surplus for section honey is placed over

the frames at the time of hiving. Some of the sections in the surplus arrangement should be partly filled with comb left over from the season previous, so as to start work in the sections at the same time the bees start below. This causes the bees to store honey above while they build comb more slowly below, building only as fast as the prolificness of the queen demands it."

"Do you keep the swarm all of the season in this contracted brood-nest?"

"No. As the queen's ability for laying increases, more frames are added, so that at the end of the season I have the hive filled, or very nearly so, with nice worker comb, and secure lots of section honey. By this plan I secure three important items—much section honey, very little drone comb, and a hive filled with nice straight worker comb, the latter costing less, in my estimation, than it would to buy the foundation, wire the frames, and fit the foundation into them."

"Do you think I could succeed by that plan?"

"I know nothing why you can not, and I hope you will try it the coming season, on a few swarms at least; for if it works as well with you as it does with me, it will be quite a saving to you, both in vexation and in not rearing a host of useless drones to eat up the early honey which the industrious little workers gather."

"Do you treat after-swarms having virgin queens in the same way?"

"No, this does not apply to such swarms, for there seems to be no disposition with them to build drone comb, unless the swarm should be an exceedingly large one. All swarms or colonies having a young queen just commencing to lay rarely ever build any drone comb the same season; nor will the young queen in the parent colony lay any eggs in the drone comb in the hive already built; because when an old colony has a young laying queen after a swarm has issued, instinct teaches them that they may expect this queen to meet all of the requirements of a mother-bee for the rest of the season, and drones are necessary only when a change of mothers is contemplated."

"Why, will not such colonies build nice worker comb then?"

"They will, and I often take advantage of this fact, and manage to get one or two nice perfect worker combs built for future use while the bees of these colonies are at work vigorously in the sections, by taking one or two full combs out of the center of the brood-nest of colonies having such queens, and inserting empty frames in their places."

"But doesn't it detract from the honey crop?"

"These frames are filled, apparently, without the cost of any section honey, while it seems to give great energy to the colony so building comb. The combs thus secured, and any which I may secure from any nuclei or weak colonies which are too weak to work in sections advantageously, are carefully kept for the next season, when they can be used to fill out the hives of any swarms whose queens may not be of sufficient prolificness to cause

the bees to fill out completely the whole number of frames given with full combs having the worker size of cells. Plenty of frames filled with worker combs are something prized by any apiarist. But I must be going, as it is getting dark."



[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

THE OLD-STYLE A. I. ROOT CHAFF HIVE; A. I. R. HIMSELF HAS SOMETHING TO SAY IN REGARD TO BEE-KEEPING AND WHAT KIND OF HIVES TO USE.

The A. I. Root Co.:—I have just noticed in May 1st GLEANINGS your apiary. I see you still have some of the A. I. Root chaff hives of a few years ago. Don't tell A. I. that I think they are the best hives ever got up for comb honey. When I had them in my yards I got quite a crop of honey every year. Since I began using the eight-frame Dovetailed my honey has not materialized as it did with the A. I. Root chaff hives. The hives as then made were warmer in the supers, as there were no openings between supers, and the sides were protected. I feel that the eight-frame hive has had considerable to do with our small honey crops for the last few years. If a bee-keeper wants comb honey, I think the chaff hives are the hives.

F. A. SALISBURY.

Syracuse, N. Y., May 7.

[I have just instructed our stenographer to get this in before Ernest sees it or adds any footnote to it, if he can. It is just what I thought years ago, and it is what I still think, judging from the reports that come in. There may be hives as good for wintering as the old chaff hive, but I do not think there are any very much better; and when it comes to wintering and summering, protecting the bees from both heat and cold, and sudden changes, it seems to me the chaff hive is the thing. Whenever I see reports in regard to wintering, where chaff hives are contrasted with other hives, it looks to me as if the chaff hives always come out ahead. Friend Salisbury, here is my hand, and I wish to congratulate you on your sound, mature good sense and observation. Of course, the eight-frame hive is a fine thing where bees are to be moved to out-apiaries and back again. It is a fine thing where bees are to be shipped, or, perhaps, we may add, offered for sale. It is a fine thing for queen-rearing, where you do not wish to bother with smaller nuclei that are liable to run short of stores; and I think I would have both the eight-frame hives and also the chaff hives in every well-appointed apiary. But

when it comes to wintering here in the North, I would double up, saving my best queens, and have every colony in an old-fashioned Root chaff hive.—A. I. R.]

WILL BEES CARRY HONEY DOWN FROM THE UPPER STORY? CONDITIONS FAVORABLE FOR SWARMING.

Mr. Root.—I wish to ask a few simple questions which I fail to find in your A B C book.

1. I winter my bees on summer stands, and I wish to know whether, if I leave my honey-boards on top of the first story, the bees will carry down honey from the upper story provided they run short below, or will they be liable to suffer, or allow the queen to suffer, during some cold snap?

2. Will bees be as apt to swarm with the honey-board over the first story of an eight-frame Dovetailed hive with one five-inch super on top as they would provided the honey-board were left off, and allow the queen to go into the super too?

3. Can I make it pay me to invest money in bees when I have only about five to six weeks' honey-flow from poplar and linn that furnishes the bees a good chance to gather honey?

Kings Creek, Ky.

DR. M. FIELDS.

[1. Bees will not, as a rule, carry honey down from the upper story to the lower; but in any case the bees would not starve as long as they could get at something above. The cluster would be more likely to desert the lower part of the hive, and go into the upper where the honey is.

2. In speaking of a honey-board I assume that you mean one using perforated zinc. As a general rule, we may say that the more limited the quarters for the queen for egg-laying, the more inclined the bees will be to swarm. If she could have access to the super as well as to the brood-nest the bees might delay their swarming—perhaps not swarm at all. But I should never think of letting a queen go into a comb-honey super. If you wish to cut down swarming, give the bees an extra brood-nest, and let the queen have access to both stories. But unless the honey-flow is liable to continue for five or six weeks, part of the time from basswood, you had better keep the bees confined to one brood-nest, and let them swarm if they will.

3. Yes, I think you could. Some bee-keepers make it pay when they have a flow of only two or three weeks. A good deal depends, however, on how much of a flow there is during the time.—ED.]

HOW TO SEND QUEENS BY EXPRESS.

A party residing in Fingal, Ont., Canada, who used to own an apiary here, which, in its transfer to other parties' hands, has made as a stipulation in settlement by one of the parties through whose hands part of the bees have passed, that in part settlement for obligations incurred, said party shall deliver at Fingal, Ont., Canada, five queens together with 200 (or 250) bees with each queen. What dimensions and specification for the right kind of

shipping-cage will meet this case with fair chance of getting queens and bees delivered with success? RUSSELL J. HALL.

Craftonville, Cal.

[If it is required that there should be not less than 200 bees in each package with queen, the shipments would have to go by express. In that case I would recommend a beeway section having combs attached all around on the four sides, and partly filled with honey. The section should be placed in a little box just large enough to receive it. A queen with 200 bees could then very easily be accommodated, and yet the package would be light enough to go at comparatively small expense. The inclosing box or case that contains the section should have two ventilating holes $\frac{1}{2}$ or $\frac{3}{4}$ in. in diameter, covered with wire cloth on the inside. The five packages should then be put in one crate, and the whole sent by express. It would be far cheaper to send the queens by mail in the regulation cages, and run the chances of being compelled to replace one that might die in the mails. If queens were taken direct from the hive, and mailed the same day, the whole five ought to go through alive in good order. But the packages by express would make small nuclei; and, if given proper feeding and time, would make colonies.—ED.]

STRENGTHENING WEAK COLONIES AT THE EXPENSE OF THE STRONG.

I have a colony of bees that is not as strong as I should like them to be. I do not want to unite them with one of the other colonies, for they are strong enough. They are in old Langstroth hives and the combs are built in all directions, so I can not give the weak colony a frame of brood. Do you think I could take the first swarm this spring and put it in with the weak colony if I were to kill one of the queens? E. SCHWARZTRAUBER.

Greenbush, O., May 9.

[It is generally regarded as bad practice to push ahead all weak colonies at the expense of the normal or strong ones. Your better way would be to leave it just as it is; and while you probably can not make it strong enough to gather much honey, you can get it into good condition for winter so that it will be strong and vigorous a year hence. To take brood away from another colony would hurt that colony far more than it would benefit the one to which it was given. In other words, you will get more honey in the end if both colonies are left as they are. If you should happen to have a stray swarm come, give it with this weak colony, but be sure to cage the queen already in the hive, and destroy the one that came with the swarm if she is inferior to the one caged.—ED.]

WILL ABSCONDING SWARMS RETURN?

I see in Questions and Answers, in *American Bee Journal*, that Dr. C. C. Miller seems to think an absconding swarm will not return. My neighbor, Madison Duke, had one return several years ago, and June 12th of last year I

had a swarm issue at half-past 9, and stayed until 1, and then vamoosed for the wilderness, my wife watching them. At 3 o'clock I returned home, and at 5 o'clock I heard and saw them return, and know that they were mine, as they came back in the exact line they went away in, and, furthermore, I am the only one who has Italians in this section. Therefore I think they could not find a place, and thought best to return.

J. H. ALLEN.

[Dr. Miller replies:]

While the circumstantial evidences are strong, they are not entirely conclusive. There still remains the possibility that on the morning of June 12 a colony of Italians miles away may have swarmed, the swarm entering Mr. Allen's hive on the afternoon of the same day.

HOW TO GET A SWARM FROM AN INACCESSIBLE POSITION.

Once, after a very mild winter, with the bees in an apple-orchard, there were numerous swarms in March. They invariably pitched on the body of the tree, near the ground. There was no foliage on the trees. I had trouble, in the ordinary way, to get them into the hive. I took a frame of eggs and brood in all stages, and tied it to a limb so it would hang against the bees. In a very short time I found the queen on it. I put it in the hive, and the bees all quickly entered. After that, whether the swarm was in a difficult place or not, I put against it such a frame, and the queen invariably got on to it in a very short time, and there was no trouble in hiving the bees. Sometimes I would use a pole to elevate the frame to the place where the swarm was. By this method I found hiving easy.

J. W. JACKSON.

Opelousas, La.

[I have practiced the plan you speak of many times, and it works well. It is the only satisfactory way to get a swarm out of a crotch or off from a trunk of a tree.—ED.]

IS THERE DANGER OF OVERHEATING HONEY SURROUNDED BY WATER?

Mr. Root:—You say, page 305, about damaging honey in liquefying, "No danger of overheating unless the can is put right on the stove." Now, I think you had better try it and see. Michigan honey can be ruined, even when heated in water, both in color and flavor, mostly in flavor. I am not acquainted with Mr. Fowls, but I judge he has had experience in this line.

O. H. TOWNSEND.

[I guess you are right—yes, I know you are. On second thought I know there is danger of overheating honey in water. We have for years cautioned against heating candied honey higher than 180 degrees F., because experience has shown us that when it is brought to a higher temperature, the honey is likely to be darkened in color, and injured slightly in flavor. I am sorry to be obliged to confess error, as I know my friend Mr. Fowls will chuckle over it not a little. Spores can stand a continued boiling temperature of from two

to three hours, while the actual bacilli—those hatched from the spores—will probably be killed immediately in boiling water. It is evident that there has been confusion in the minds of a good many on this matter of spores and bacilli.—ED.]

GETTING DOOLITTLE QUEEN-CUPS ACCEPTED WITHOUT ROYAL JELLY.

Mr. Editor:—We have been raising young queens this spring. The other day, when we got ready to put the larvæ in the queen-cups we found we had no queen-cells and no royal jelly, so we took a frame of unsealed drone comb and removed the larvæ, and procured enough jelly from two or three larvæ for each queen-cup; and to-day I looked at the frame and found eleven capped over.

WHY DID THE SWARM DECAMP?

On the 16th day of April I found a very large swarm clustered on a tree, and hived them in a ten-frame hive with inch starters only. The next day I looked at them, and they were working away lively. I thought they were all right; but on the 18th I noticed there were very few bees flying, and I opened them up to see what was the matter, and found they had decamped, leaving only about half a pint of bees; but the mystery was that, on opposite sides of the hive, they had built a nice lot of worker comb as large as my two hands, and in each were a few eggs. What was the matter?

E. B. BEECHER.

Auburn, Cal., April 21.

[Yes, you can get the bees to build queen-cells from Doolittle cups supplied with only ordinary food from worker-cells; but as a general rule a much larger percentage of cells so supplied are liable to be rejected by the bees; and in all probability, too, the queens reared from a start of larval food would not be as good as those supplied with genuine royal jelly from the very beginning.

As to why swarms will sometimes leave their hives is one of the things we can not explain; but it nevertheless is not an uncommon thing for a newly hived swarm to decamp in a day or two when hived on starters or frames of foundation only. It is our practice, when hiving on foundation, to give the bees just one frame of unsealed larvæ. It is very seldom that they will desert young brood; and while the presence of it will not invariably hold them, yet it seems to be, according to our experience, quite a restrainer.—ED.]

POLLEN IN SECTIONS.

Not long ago I saw something in GLEANINGS about the probability of bees putting pollen in sections. A long time ago I learned by dear experience that when swarms were hived on starters or wired foundation, and the bees were immediately given partly filled sections, brood would often, and pollen almost always, be put in the sections. Queen-excluders will keep out the brood, but not always the pollen. With a set of empty combs, or even two or three, with the starters, the pollen would be left in the brood-

chamber. The plan of putting a few combs with the starters, or frames of foundation, is objectionable, as the bees are very apt to bulge them into the adjoining frames, thus making combs of very uneven thickness; so I adopted the plan of putting sections of foundation or starters on newly hived swarms, and, after a few days, when combs had been built, the partly filled sections were moved from the parent hive to the new one.

South Haven, Mich.

H. D. BURREL.

[There is no doubt that in some localities (perhaps in the majority of them), when bees are hived on starters, and the queen confined below by a perforated zinc honey-board, pollen would be crowded up into the sections; but in telling how you remedy the trouble, either you do not say what you mean or else I do not understand you. You speak about putting the sections of foundation on "newly hived swarms," and then you tell about moving the sections from the parent hive to the swarm. Don't you mean that the sections are put on the parent hive in the first place, and *then* when the swarm has got its starters or foundation drawn out in the brood-nest sufficiently to catch all the pollen, you then put on the sections which are now on the parent hive?—Ed.]

A FRAME OF UNSEALED LARVÆ TO HOLD A SWARM.

Once I had a swarm of bees alight. I hived it. The next day it swarmed again. I hived it. The following day it swarmed the third time; then it occurred to me that its queen might be a virgin, and, in going out to seek a drone, the bees followed because they had no means of replacing her if she failed to return. I then put in the hive a frame of eggs and brood in all stages from a colony I was willing to raise a queen from, and hived them again. I had no further trouble with it. Afterward I always, in hiving a swarm, put in the hive such a frame, and never had any more re-swarming.

J. W. JACKSON.

Opelousas, La.

[Your experience is quite in line with our own, and we have recommended, when hiving, to give a frame of young brood, especially if the swarm is hived on foundation.—Ed.]

"FLORIDA WHITE;" CAN 3000 COLONIES BE SUPPORTED IN ANY LOCATION?

Away up here in Western Florida is a bee country you hear little about. The present season we began with 200 colonies, and to-day have our extracting-supers three deep on many of the hives, and none but that have two on. On our hives devoted to comb honey we have supers three deep, but are removing those that are filled, and putting on empties. Tupelo is the main source from which our surplus comes, and the main flow will not be here for ten days.

Ernest, you speak of no place in the world that will support 3000 colonies of bees. Perhaps there is not; but I will bet you a penny that I can keep 3000 colonies of bees here on

a paying basis, and not have an out-apiary more than 15 miles from home. Buyers are very anxious to get our honey. We don't have any "Southern strained." It is "*Florida white*."

M. W. SHEPHERD.

Marchant, Fla., Apr. 12.

[You must have a fine location, and we here in the North envy you such big averages per colony.

With regard to 3000 colonies, you misunderstand me. There are localities already that have that number within a radius of 15 miles, some of them in the United States. What I meant was that there could not be 3000 in one apiary, so to speak, or, we will say, within a radius of half a mile. The newspaper article, if I remember correctly, reported that there were 3000 in one place in California, and this I regarded as a fake newspaper yarn.—Ed.]

CONTRACTION; ITS ADVANTAGES AND DISADVANTAGES.

It has appeared to me that by using only five frames in the eight-frame hive, and dummies on each side, I get more honey in my supers. Is this reasonable, or do you suppose it depended on special conditions at the time I tried it?

CHAS. A. PEPLÉ.

Richmond, Va., May 11.

[The practice of using only five frames in an eight-frame brood-nest, and filling up the space with dummies for the purpose of forcing what honey does come in into the supers, is called "contraction." This was extensively practiced a few years ago, but is now generally abandoned. It is far better to have the colonies so strong that, when the first honey comes, it will be rushed right into the supers. It is better to use a full-sized brood-nest than to put away with weak colonies with a contracted brood-nest. But if the honey-flow is short, and colonies are not overly strong, then contraction may be practiced sometimes to advantage. But in this case it will be necessary to watch closely for swarms, as contraction has quite a tendency to encourage the swarming propensity, because the bees seem to need more room for brood-rearing.—Ed.]

1. How much drone comb should bees have in their brood-nest?

2. How can I put up chunk honey here in the South to prevent the moths from destroying it?

AUGUST PFEFFER.

Kenney, Texas.

[1. This depends on whether you desire to rear queens. If not, the fewer drone-cells in the hive the better. In any case I would make an effort to have worker comb in all hives except where there were breeding queens. To such we sometimes give a whole frame of drone comb, just for the purpose of getting choice drones.

2. If the chunks of comb honey are swimming in, or are fairly covered with good extracted, putting the whole, immediately after it came from the hives, in pails with covers,

ought to protect it from the ravages of the moth; but if there is a great deal of chunk honey, and a small amount of extracted, there might be some danger.—ED.]

I should like a discussion in GLEANINGS in regard to strainers for honey, and prevention of swarming in our yards. C. R. MORTS.

Mohawk, N. Y.

[One of the best honey-strainers—perhaps the best—is illustrated and described by Rambler, in GLEANINGS for Sept. 15th, page 683, last year. For prevention of swarming, see our March 15th issue, pages 218 and 219.—ED.]

Can you tell me through your columns a way, if there is one, of taking granulated honey from the comb without destroying the cell? C. H. S.

[The article on page 305, of our issue for April 15th, will give you just the information you seek.—ED.]

Can I hive the third swarm in with the second, that comes from the same hive, successfully? T. G. LEDBETTER.

Weaver Sta., Ala.

[Yes; but better, far better, prevent second swarms.—ED.]

W. C. Townsend, Buffalo, just sold for me 9 cases, 24 in case, 216 4x5 sections, 194 lbs., net, at 15 cts., \$29.10; charges \$4.56—\$24.54 net. Batterson & Co., 9 cases, 20 sections in case, \$1.80. Sections 3½x5, \$23.46. 3½ sold for 2c more per lb. than the 4x5. Honey No. 1, and same quality; these sales are much in favor of the 3½ sections. My Washington men say 3½ sells just as well as 4x5. As they fit the L. frame, let us make the 3½ standard. I have 500 colonies, all plain sections. F. G. BASS.

Front Royal, Va.



F. R. S., La.—Albino bees and queens look the same as Italian except that the rings of fuzz or hair are always white instead of a grayish dark color. They are nothing more nor less than sports from Italian stock.

M. C., Fla.—The mosquito-hawk, or dragon-fly, as they are sometimes called, may be easily scared away or brought down by boys with whips, or at least that is what Prof. Cook recommends in his book. While they prey upon bees to some extent, it is not generally considered that they do any great damage.

J. A. M., Pa.—Specimens of bees you send are those that died from bee-paralysis. I know of no cure for the disease. If the colony is very badly infected, for the sake of the others you had better burn hives, bees, and all, as the disease is mildly contagious. If you can not afford to do this, put the hive or hives of

bees containing this disease in a location at least two or three miles away from your bees and others. Destroy the queens, and then introduce queens from healthy stock.

A. D. W., Va.—Bee-veils with celluloid and glass fronts are described in our A B C of Bee Culture; but in comparison with the silk tulle, so far as clearness of vision is concerned they are little if any better, much more expensive, and, on account of their weight, are not apt to hang straight, but will flop back and forth at every movement of the apiarist. The glass, moreover, is liable to break, and get covered with moisture from the breath, to say nothing of getting dirty. I have personally tried these devices myself, and do not consider them anywhere equal to silk tulle that is sold by the Dadants.

J. B. S., Neb.—From your letter I should judge your bees are troubled with what is known as dysentery—a very common disease or malady in early spring; but as soon as settled warm weather comes on you will find that it will disappear and give you no further trouble. Young bees carried out, which you speak of, are probably those that have come from the chilled brood, or brood chilled during the cold weather which seems to have been universal almost all over the country. There will be no danger whatever in hiving swarms or putting bees in hives in which bees have died during winter. To save combs from moth-worms, put them in an upper story on a strong colony. For further particulars on all these questions see "Bee-moth," "Spring Dwindling," and "Dysentery," in our A B C of Bee Culture.

F. M., Ohio.—I can scarcely tell you what caused the death of your bees unless it was the honey they gathered from the onions. Some kinds of honey are very destructive to bees during winter, and I should be rather of the opinion that the honey your bees gathered from the onion-plants was the cause of your loss. But with your hives and your combs filled, even with this bad honey, at this time of the year, you can make a good start. If you work it right you can have those hives full of bees, every one of them, by fall, for that dark honey would be all right for brood-rearing. Of course, if your bees died of some disease, and the germs of that disease are lurking in the honey, then of course it should not be used for spring or summer feeding. To make a new start, purchase one or two colonies of common bees; bring these home and divide them up into five or six little nuclei, giving each hive about one frame of bees. Close the entrances down to a space that two or three bees can pass through at a time. These nuclei should be given unsealed larvae so they can raise a queen, or, better still, give them queen-cells. If you read the subjects of "Dividing" and "Artificial Swarming" in our A B C of Bee Culture you will be able to carry out this increase with very small expense; but as soon as practical we would advise you to raise queens by the Doolittle method, which you will see described in our A B C of Bee Culture.



THOSE jumbo colonies in jumbo hives are boomers; but, my! what *awful* things they are to lift! If I had to do the work alone I would try to invent some sort of derrick or lifting-machine for that purpose. All the same, I think I like them. If they won't swarm much, and will pile in the honey, I could put up with a good deal of inconvenience.

As extensive as the revisions were in the last edition of the A B C of Bee Culture, which edition of 5000 copies will be exhausted inside of a year, the revisions for the new edition will be much more elaborate. While the work will be larger, the price will be the same. I can only suggest that prospective buyers wait till the new book is out, as it will be impossible for us to get the new edition out before the old one is exhausted.

KING BIRDS A DAMAGE IN A QUEEN-REARING APIARY.

KING BIRDS and other bee-birds are apparently making bad work in our queen-rearing operations in our home apiary. I watched the king-birds one evening, and found that one would sit on a tree, make a dive through the air, catch a bee, go back to its perch, and proceed to masticate its precious morsel. Since these birds have made such frequent visitations we have had considerable losses of young queens. As queens would be slower of flight, and larger and more conspicuous in every way than ordinary worker bees, the birds would be quite likely to single them out from the other bees. I have just bought some No. 10. nitro-powder shot-shells, and with my new Parker hammerless I propose to seek my revenge.

Experiments were made, I believe, at one experiment station, showing that the bees caught by king-birds were drones. That is to say, birds were shot, and their crops opened. But these birds, doubtless, were killed in the vicinity of apiaries making the production of honey the sole business. If king-birds select the big bees (the drones) in an ordinary *honey* apiary, I would naturally suppose they would chase up and catch *queen*-bees—those that are out on their wedding-flights in a queen-rearing yard.

Later.—I have been out with my gun several times, but have not once seen a king-bird; but I hear of their being on hand and doing a good business when I am not there.

HOW TO GET RID OF THE CROSS BEES THAT CHASE ONE ABOUT ON THE WING.

THIS afternoon, May 16, at our out-yard, in reversing bottom-boards from shallow to deep entrances I incurred the special wrath of one particular colony. I supposed I had smoked at its entrance and loosened its bottom-board,

but probably had omitted to do it, by the way the rascals pitched into me. And then, to make matters worse, the bottom-board stuck and finally came loose with a snap. I did not try to "argue" the matter, but beat a hasty retreat, for there were two or three dozen mad bees clinging to my veil; and my nose (ever prominent) was holding out a portion of that thin structure. Then there were several other squads that were feeling up my sleeves, and reminding me that they had not forgotten the use of their weapons. I went off shaking my head to keep my nose from the veil, and crammed my hands in my pockets. I waited a few minutes and went back. But there were two or three dozen of those dare-devils in the air that persisted in following me, and every once in a while making a dive up my sleeves. Finally my patience was exhausted. I went to my tool-box and picked up two strips of wood about $\frac{1}{4}$ inch thick, $1\frac{1}{2}$ inches wide, and a foot long. With one of these in each hand I struck right and left. But do you think I hit them? Not one. Finally an idea came to me. I then worked those strips back and forth rapidly, about as one would work a fan before the face on a hot day, and, presto! how their little bodies did flip, crack, bang, and whack! By keeping up a continuous whirring motion of the two little strips of wood before my face, and without making any effort to hit any particular bee, I succeeded in killing every one of them in much less time than it takes to say it, and, oh what a relief!

You see, the point is here: A rapid whirring movement back and forth excites their fury all the more. They make a dive for the moving objects, with the result that they get their heads cracked, and down they fall into the grass, right and left. If one were to strike at one bee on the wing it would not be there, of course, by the time the blow was delivered.

I verily believe that, if I had tried this act when in Coggs' yard, when he was performing "the kick-off-superact," I could have killed a thousand bees in a short time.

No one likes to be annoyed by a lot of bees following him about as they will do at times; and when they once learn this bad habit they are apt to keep it up; and a good plan is to get rid of them quickly and easily at the start.

Perhaps I should explain that we make it a rule to send all the cross bees, and all others from which it is not desirable to breed, down to the out-yard. There are there now two colonies that will give the first thief a warm reception. It was not one of these whose wrath I incurred, but I should judge that their bees took a hand in the fracas.

BLACK BROOD IN NEW YORK.

It seems that this disease is breaking out again in the Empire State, for I hear of its having started up in several localities. The following letter will show that the Commissioner of Agriculture, in whose hands rest the responsibility and the power, largely, to eradicate this disease, is very much interested, and is doing and will do all he can to stem the tide of its ravages.

Mr. Root:—I will explain here that last season Mr. West was appointed bee-inspector until a civil-service examination was held, which occurred July 29. He passed at 95.2; I at 91.2 and W. D. Wright at 93.6, while M. Stevens stood 85. (I think these figures are correct.) Mr. Stevens, being a veteran, took precedence over all of us, and Mr. West was also appointed.

These inspectors did some very effective work; but the diseased territory was too large to be thoroughly inspected without more help, so W. D. Wright and I were appointed by the New York State Agricultural Commissioner, and ordered to report at the commissioner's office at Albany for work May 1. We accordingly met Mr. Stevens and Mr. West at that time, and spent two days in consultation with the State officials (who, by the way, were very kind and courteous to us) as to how the State should be divided, and ways and methods, etc.

I think it would be well to announce the territory assigned to each inspector, and I inclose a list of alphabetically arranged counties in each inspector's division. All communication in regard to diseased bees should be sent to the inspector in whose division the bees are located.

CHAS. STEWART.

Sammons ville, N. Y., May 4.

In this connection perhaps it may be well to state that extracted honey from colonies affected with black brood ought to be boiled at least one hour to be safe. Hives should be scalded or burned out, and bee-keepers in the infected regions would do well not to exchange combs. Tools, smokers, bee-gloves, bee-veils, bee-hats, and even the clothing that is used around diseased colonies, should be disinfected before working on healthy ones. It should be remembered that both foul brood and black brood are very contagious, and the inspectors of the State will do well to urge every precaution.

The most serious difficulty to be encountered will be ignorance as to the nature of this contagious disease; for I learned while in New York that a few bee-keepers who had black brood in the apiary, and *knew* they had it, took no precaution about exchanging combs, did not wash the hands, much less disinfect smokers or clothing, because they did not know that it was necessary.

The honey from diseased colonies will do no harm to human beings; but I would suggest that the production of comb honey in disease-infected localities be discontinued, and that extracted only be produced. It may be a hardship to observe all these precautions, now, but it will mean many dollars in the future, even if it is a sacrifice now.

MOVING A WHOLE APIARY A SHORT DISTANCE.

In moving our out-yard to its summer location, our men did not quite understand just how I wished them located in reference to the trees; that is, they got them on the *south* side of the trees, where the sun would strike them with full force, instead of on the north side. Notwithstanding the bees were working on fruit-bloom quite heavily, I determined to make an experiment, because I felt the bees must be in the shade. I accordingly moved each group of three, four, or five hives directly north about six feet, but took the precaution to keep each hive in each group in the same relative position it formerly occupied in reference to the others. It was quite a "tugging" job, but in the course of an hour I had the whole apiary moved about six feet northward. While I was doing the moving of the hives in individual groups, there was some confusion; but after all the hives were moved, taking in the whole apiary, the bees of the several colonies flew to their hives the same as before.

It never would have done to move one group without moving all; neither would it have been good practice to move one hive in a group without moving the other hives; that is to say, if an apiary is to be moved a few feet, every hive in the apiary should be moved, and their same relative positions preserved. If there had been a great deal of shrubbery in the yard, there would have been no end of confusion in the flight of the bees; but in this case there was only the trees, and these, as the results showed, did not seem to be the occasion of any great confusion.

DOOLITTLE CELL-CUPS WITH LARGE OR REDUCED BOTTOMS.

A SHORT time ago I sent to Dr. Miller, who has now begun active queen-rearing, some cell-forming sticks. Quite a number had large blunt ends, as illustrated in our last issue, and the rest had ends reduced to the size of a worker cell. I asked the doctor to try both, and then decide which he thought was the better; and to-day I received a letter, or a

NEW-YORK STATE BEE-INSPECTORS.

Division 1.—W. D. Wright, Altamont, Albany Co.	Division 2.—N. D. West, Middleburg, Schoharie Co.	Division 3.—Chas. Stewart, Sammons ville, Fulton Co.	Division 4.—M. Stevens, Pennellville, Oswego Co.
Albany, Clinton, Columbia, Dutchess, Essex, Greene, New York, Putnam, Rensselaer, Saratoga, Schenectady, Warren, Washington, Westchester.	Broome, Chenango, Delaware, Kings, Nassau, Orange, Otsego, Queens, Richmond, Rockland, Schoharie, Suffolk, Sullivan, Ulster.	Allegany, Chemung, Cortland, Fulton, Hamilton, Herkimer, Madison, Montgomery, Oneida, Schuyler, Steuben, Tioga, Tompkins.	Cattaraugus, Cayuga, Chautauqua, Erie, Franklin, Genesee, Jefferson, Lewis, Livingston, Monroe, Niagara, Onondaga, Ontario, Orleans, Oswego, Seneca, St. Lawrence, Wayne, Wyoming, Yates.
—14 counties.	—14 counties.	—13 counties.	—20 counties.

sort of private note, which will explain itself :

Dear Ernest:—I don't know how it is at Medina, but in getting queen-cells accepted without giving royal jelly, the small-bottomed cell-cups are away ahead. Indeed, I haven't succeeded in getting the large-bottomed cells accepted at all; but with the cocoons set in the small-bottomed cups there is no trouble. I used both kinds on the same stick, and had the nine with cocoons promptly accepted and the other nine promptly cleaned out. Out of about 50 of the large kind given, not one has been accepted. Of course, if royal jelly were used the case would be different; but that would be more trouble than to use cocoons.

C. C. MILLER.

I would explain that the cell-forming sticks with reduced ends were made after the pattern, I believe, first suggested by Willie Atchley, of Beeville, Texas, and now used by W. H. Pridgen, of Creek, N. C. We last season used cell-cups with large bottoms the same as recommended in Doolittle's book. These appear to answer every requirement; but Mr. Pridgen and Willie Atchley both claim that it is an advantage to use cups with reduced bottoms, so that the ordinary cocoons from worker-cells, after the comb has been sliced down, can be lifted out with its larva, and inserted in the bottom of the cell-cup. This will make plain what the doctor means when he speaks about the cocoons being promptly accepted.

I referred this matter to Mr. Wardell, who still prefers to use cell-cups with large bottoms; and when he uses royal jelly he gets a larger percentage of accepted cells of the large-bottom class; so that I do not know that Dr. Miller's experience is diametrically opposite to Mr. Wardell's.

THE HAKES-HEDDON ADULTERATION CASE.

In the *Review* for May, Mr. Hutchinson gives a summary of the Hakes-Heddon adulteration case, a report of which was published in our last issue. In this connection Mr. Hutchinson says a sample of a lot of honey which he sold to Hakes, and which he (Mr. Hutchinson) says he bought of us, was also pronounced by the chemist to be adulterated. This matter was brought to our attention; but from the best information we could then get hold of, the matter seemed to be very much mixed. Further investigation shows that the sample came from a shelf on which there were also bottles of Hakes-Heddon honey—all of the packages "having the same labels," and right here would be a big chance for a mistake as to the source. In any case the sample is reported to have been "adulterated the same as the Hakes-Heddon honey."

We want the truth, no matter where it hits. If the honey came originally from us, it is some we sold to Mr. Hutchinson some three years ago. This he used for exhibition purposes, and afterward, as he says, sold it to Mr. Hakes. Mr. Hutchinson believed it to be pure, and so did we, and we think so yet. Even if the honey came from Mr. Hutchinson it is not altogether clear that it came from us. Referring to the lot of honey that Hutchinson sent him, Hakes writes that Hutchinson wrote him that *some of it* might have come from The A. I. Root Co.. This would indicate that Hakes had some honey from Hutch-

inson that did not come from us. In my talk with Dr. Mason I took it that he (Mason) gathered the same impression from correspondence he had had with Hutchinson. Here again there may be a mistake. I don't know. But however this may be, it is of small consequence, as Mr. Hutchinson would no more adulterate, or knowingly sell adulterated goods, than we. We understand also that the food commissioner visited Hutchinson, inspected his honey, and pronounced it all right.

The sample of the so-called Hutchinson-Hakes honey was not purchased by the food inspector as were the other samples referred to in Secretary Mason's report, and as a consequence no regular records were made as would be required from the inspectors. The sample was simply bought by Mr. Soper and sent to the chemist after the food commissioners had bought the Hakes-Heddon honey. This is the reason why the matter did not appear in the Michigan Dairy and Food Bulletin No. 50.

It is our rule to buy of reputable producers; and, so far as we know, we have never sold an ounce of adulterated honey. As soon as we can get together further facts we will place them before our readers.

MORE ABOUT BELGIAN HARES.

SINCE preparing the footnote to Fr. Greiner's article in this issue I have run across an article in *The Farmer*, of St. Paul, Minn., on the subject of raising Belgian hares. The article was very interesting, and from it I make a few extracts that our readers may perhaps peruse with pleasure as well as profit:

The Belgian-hare fever is at once the beginning of a craze and the inauguration of an industry. All sorts of places will do for a rabbitry. A dry-goods box on the rear porch is sufficient, if the progeny are quickly disposed of. From this cheap and common method to the rearing of hares in gilded palaces of netting and hardwood, is a wide range; but the fever attacks the poor as well as the rich.

But fads do not take a strong hold of the American unless there proves to be money in them in a practical way; and it may not be a waste of time and space to set forth in type some of the claims made for this proposed new industry, by its friends. Twenty cents' worth of hay when hay is \$10 a ton will feed a pair of Belgian hares for one month. . . . In the markets of Belgium the hare is the common meat food. . . . The flesh of the Belgian hare lacks the heavy oily substances found in ducks, chickens, and turkeys. There is none of the strong gamey flavor found in the wild rabbit. . . . For fecundity its like does not exist in any species of the animal kingdom which supplies man with food. The Belgian hare will dress one pound for every month of its age up to six or seven months. He is good for food when ten weeks old, but the greatest profit in supplying the market is derived by waiting until he is five months old. The Belgian hare brings in the world's markets the same price as turkey. The bones of the hare are small and the food loss is practically nothing. If cauponizing is resorted to when the male is three months old a larger animal weighing as high as twelve pounds can be produced. Large numbers can be kept in a single room without damaging each other, thus reducing materially the cost of production.

Does it pay to raise Belgian hares?

Twenty dollars is sufficient capital for any one to start in the business. But the natural increase will force an additional expenditure in two months.

Unless one is familiar with the matter of raising Belgian hares he had better go very cautiously.



But he said, Nay; lest while ye gather up the tares ye root up also the wheat with them. Let both grow together till the harvest; and in the time of harvest I will say to the reapers, Gather ye together first the tares, and bind them in bundles, to burn them: but gather the wheat into my barn. — MATT. 13: 29, 30.

Since the beginning of the world I presume it has been a question among reformers, and among all good men and women, as to how far we should go in the way of righting wrongs, when it is sure to result in making a disturbance, and stirring up quarrels. My disposition is such it is very natural for me to set things right just the moment I discover they are wrong—that is, where it comes within my province. But I can look back over my life and see how many times I have given pain unnecessarily just because I did not stop and consider that the erring one was not aware he was doing any wrong at all. How often children are scolded, and perhaps sometimes punished, when they are doing their level best to obey orders! Sometimes, when the explanation comes later, my heart has been so touched I feel as if I could weep with the child while I wiped the tears from his face. Again and again has the dear partner of my life bidden me be careful and patient, telling me I did not understand the child. Somehow or other she seems *always* to understand. Blue-eyes, whom you remember seeing sitting on my knee, in the former editions of the A B C book, has now a precious blue-eyed boy of her own. He is somewhat afraid of strangers, and has been a little backward about deciding that his grandpa was good and nice. But he *always* recognizes his grandma. He is always ready to give her his sweetest smiles, and to welcome even a glimpse of her away across the room. She understands *him*, and they understand each other; and, by the way, what a grand and beautiful relationship it is, the one between grandma and the baby! Well, he is getting to believe now (and he is nearly seven months old) that grandpa too is pretty good, even if he does let him poke dandelion blossoms into his little rosy mouth and make his rosy lips all yellow, and pucker up his mouth with the bitter taste.

Sometimes we make a blunder in plucking out the tares. We get an idea that something a little unusual is a tare, when it is really a friend if we knew it. When Huber was just beginning to walk and talk, he disobeyed me one day. He did it so squarely and fairly that I felt sure it was deliberate disobedience. When I took him to task he said in a defiant way—or at least so I took it—he “didn’t care.” I remonstrated, but still he only repeated with his boyish tongue the expression that he “didn’t care.” I was appalled to think that such a child could deliberately defy a parent’s authority, and almost decided he would have to be punished to get the wicked spirit out of him. For a time he was silent, and I called his silence stubbornness. I really thought the wee

chap of a boy was contrary. He was busy thinking, however, even if he did not talk, and pretty soon his boyish heart broke forth. His mouth puckered up, and the sobs were almost ready to come as his baby lips framed the words, “In honest troot, I don’t care.” Now, his mother would have guessed long before I did the real state of affairs. He had heard somebody use the words “honest truth,” and knew what they meant; and, child though he was, he recognized that his papa did not understand him; and while I was thinking of punishing him for stubbornness, he had ransacked his infantile vocabulary to find some words or way that would give his papa an idea of just what he meant. The poor child had got the terms “don’t care” and “didn’t mean to” confused. When he kept saying he “didn’t care” he meant I should understand that the disobedience was unintentional, and that he did not mean to; and with the sobs welling up from his baby heart he recalled the words some other child had used, and made me comprehend all there was in his heart, when I was thinking *evil* of my own baby boy. What he wanted to tell me was, “In honest truth, papa, I did not mean to disobey. I love you, and I believe you know what is best, and I try to do just as you and mamma want me to do. But I am so little, papa, that I make mistakes, not because I mean to be bad, but because my actions, like my words, do not always tell exactly what is in my baby heart.” Yes, no doubt many of you have heard me tell this little story before, and memory has brought it to my mind again and again, and the little incident has done me good, and I hope it may do *you* good.

People who are always so ready to root out the tares the minute they get a glimpse of them, oftentimes in their zeal make mistakes, and sometimes they get hold of a stalk of good wheat. First be very sure it *is* a tare you are going to root out for the good of the community, and then consider again whether the roots of this very tare, if it truly *is* a tare, may not be so entwined and interwoven with the roots of the wheat that a general tear-up would be the result, and that the crop, at least in that particular spot, will be in worse shape than it was before you undertook the task of trying to make things better. Why, I can look back over my past life and see where, again and again, I wounded the feelings of very good people, and made a big rumpus about a little matter that would not have done any particular harm had it been passed by entirely, and let alone.

People have a way of saying “right is right, and right harms no man.” Some time ago I had quite a little deal with a man who has been called very difficult to get along with. We were doing some work for him. He borrowed a market-basket and laid it down carelessly where a wagon ran over it. In making out his bill for some work we did for him, he was charged, among other items, with “one market-basket, five cents.” After he had paid his bill he insisted on seeing one of the members of the firm. I asked him what was wanted, and he pointed to the item, five cents for

a basket, and told me the circumstances. I replied :

"Why, my friend, you admit you carelessly destroyed the basket. Was it not right that you should pay for it?"

"Why, yes; it is perfectly right that I should pay for it. But your people have charged me *five cents* for it, when I can buy them anywhere for *three cents*."

I stopped awhile and looked at him. Then I replied :

"So you stopped your team and your work, and came up to the office, insisting on seeing a member of the firm, just because one of our people did not know how low market-baskets are made nowadays, and charged you *two cents* more than they should have done."

He looked a little foolish, but finally rallied, and replied that "right is right;" he did not care particularly about the two cents, but it showed the disposition of our establishment to "gouge" a poor man whenever we had an opportunity. This friend of mine (for I think he is a friend, and I think, too, he intends to be a good man) has had trouble all his life because he is so vehement in plucking out the tares whenever he thinks he gets sight of one. I have explained to him before, that, if he is right in thinking the members of our firm are always wanting to cheat somebody, he is certainly mistaken in thinking the men we employ are *always* trying to cheat. I told him the man who made out the bill could have had no possible motive in wanting to cheat him, for if he succeeded it would not go into his *own* pocket. He simply furnished the items for the book-keeper. He was not an interested party in the matter either way. Still he would have it that everybody was *trying to wrong him*.

These illustrations I have given you are all on a small scale; and some of them pertain to cases where it is a question as to whether the objectionable thing be really a noxious weed. In some of my talks of late I have told you about the terrible inroads intemperance is making into the affairs of State and nation. I have told you of downright frauds, humbugs and swindles, and I don't know but I myself have erred in urging that the tares be yanked out forthwith, no matter what may be upturned and thrown out of order.

At one time in my life a man forged my name. When the note was held up before my eyes, with my signature attached—a signature I had never written, nor permitted anybody else to write for me—I was a great deal stirred up; and I supposed, of course, that the man who did it should go to the penitentiary. Only three or four persons knew about it; and when the officers of the law said he need not go to the penitentiary, unless I so decided, I began to feel troubled. I do not know but I have all my life said the right and proper thing to do with a man who commits forgery is to let him pay the penalty and go to prison; but when I could, by the turn of my finger, send the hard-working man to prison, or let him keep on with his work, I began to wish that God in his providence had not placed any such responsibility on me. I said to the three

or four persons who knew the transaction, "Gentlemen, this is a new experience to me. What is usually done in such cases?"

The reply came, and I think it came from the attorney, "Well, the one whose name has been forged generally does what he thinks best under the circumstances. If he puts it in the hands of the law, there is no help for the culprit."

"But," I replied, "*somebody* has to pay this money if this man is spared from the penalty. Is it just the thing for me to do, to hand over the money exactly as if I *did* write my name on that paper, when in fact I never knew a thing about the transaction?"

I presume the friends present knew me, and perhaps they knew of these Home Papers; and they exchanged smiles to see how I would act when brought face to face with crime, especially when I had the life and happiness of a fellow-being balanced on the tip of my finger, as it were. Satan said (at least I *think* it was Satan), "Send him to prison; serves him right. Why, if you let fellows like him go 'scot free,' you are paying a premium to those who commit forgery and all other crimes. Never mind his wife, never mind his relatives; never mind if he has been a steady hard-working man all his life. Teach him a lesson. The lesson will do others good. Let the world know the consequences of such work as this." Come to think of it, I do not know whether Satan used all of those arguments. The thoughts passed through my mind, anyhow. When you discover a forgery in your neighborhood, what is the thing to do—yank him out of the wheat and send him to prison, or shall we look into the matter and see how much wheat will be turned up and displaced, and thrown out of place by the transaction?

Well, after Satan had presented all his arguments, or at least a good many, some other voice spoke. I do not know but it was a still small voice. It went away back. This still small voice reminded me that his record had been good, or fairly good, from childhood up. This was a new and unlooked-for experience in his life; and the voice also reminded me that I had not yet had a friendly talk with him. Why, dear friends, have you ever realized that it is not an easy thing to have a friendly talk with a man who has stolen your name, or deliberately forged it? A very good lady friend of mine in Christian and Sunday-school work, who has been dead for some years, used to say to me, when I was excusing myself for wasting no more time on some "reprobate," as I called him, "But, Mr. Root, Jesus *died* for him." And her argument was unanswerable. Yes, Jesus died for the man who forged my name; and I remembered his advantages had not been equal to my own.

I told you a story through these Home Papers some little time ago that seemed to hinge about the words, "Jesus paid it all, all to him I owe." If this man was saved, there seemed to be no way but for me to pay the debt, even though it was over a hundred dollars. He promised, with tears in his eyes, and with bowed head, to pay me back every cent of it, both principal and interest, and, well—

he did not go to the penitentiary. I have never heard of his doing a thing of the kind since. Now, dear friends, I do not know just what is right and proper in such emergencies. May be hundreds and thousands of those who spend long weary years in the penitentiary might have been good and useful citizens if some good Samaritan had happened around just in time to prevent the havoc it makes in any community to arrest a man for crime. Of course, it is true that, if no one were punished, criminals would soon get an idea that there was not very much risk any way; but I would suggest right here that, when a man or boy commits his first crime, it is well to err on the side of charity. Do not be in haste to think any person has gone over to Satan, body and soul, because he has been entrapped for the first time during one evil hour. At the same time, let us beware how we ignore law or permit our laws to be trampled under foot as a dead letter.

I have not said any thing in this talk about the disposal of the tares at the final harvest. God's angels will execute judgment, and take care of those who are wilfully and deliberately and persistently wicked. I have only touched on that part of the text that treats particularly of our responsibility in the matter, and to urge upon you all to deliberate carefully, when you undertake to root out the tares, what the ultimate consequences may be; and if what appears to be tares to us at the time may ultimately result in something that bears good wheat at harvest, then let us take courage while we work and pray; and let us remember the reminder of that old saint in our teachers' meeting—"Jesus died for him;" and when we are called upon to pay a debt that we ourselves never contracted, in order to save somebody else from ruin, let us remember how the dear Savior, in a like manner, "paid it all, and made us free."



LEVEL CULTIVATION AND DUST MULCH.

The following, from the *Farm and Fireside*, agrees so nearly with my experience that I have thought best to give it entire, with remarks and suggestions of my own all the way through:

I wish to talk of the importance of so planting seed in the ground as to admit of level cultivation throughout the season. All plants which under the old system required "hilling up" should be started in trenches, the depth varying with the different sorts, so that when summer tillage is fairly under way the whole surface of the garden or field is as nearly as possible flat; thus the rake or cultivator can be brought close to the stalk of each plant.

T. B. Terry says in our potato-book that the hilling-up fashion *might* be all right if we could get nice mellow dirt enough from somewhere to fill in between and make the ground level. That is, it is an excellent idea to have the potatoes down so well in the ground that

they will not get sunburnt. But it is a fearful thing to run a shovel-plow through the potatoes, and pile the dirt up almost as straight as you can get it, just before a prolonged and severe drouth; so you see the suggestion of starting things in trenches is all right; but I should say you want your ground first thoroughly underdrained, and worked up and enriched clear down as low as you need to put your trenches.

It is very well understood nowadays that many lateral roots of certain crops—notably those of corn—grow so near the surface that they are often seriously injured by the plow and hoe as they were formerly used. But this is not the subject of my present communication, which is about the conservation of moisture by surface cultivation. Readers of the *Farm and Fireside* are familiar with the arguments; but results of personal experience, recorded by a careful observer, are never without value if on a subject of general importance.

I use my garden somewhat as an experiment station. I test theories, and am nearly as well satisfied by failure as success; a false theory can not be exploded too promptly. I have tested the theory of dust mulch for three seasons under conditions which made the test a severe one. The garden is on the crown of a small hill, the ground sloping away in three directions.

Here is another point I would emphasize. Not all of us can have our garden ground right on the crown of a hill; but we all can, by taking a little pains, have the ground so there are no hollows where water can stand during a severe rain—I do not mean so as to kill plants, but it hurts things to have it stand long enough to make a hard crust; and in our clay soil we wish to avoid, if possible, having the ground ever get so wet that the water stands in puddles, and then dries down hard. To prevent this we have open ditches clear around the outside of almost all of our fields; and we try to have the ground slope toward these open ditches. Every time the piece is prepared for a crop we do a little in the way of grading. When we have tremendous rainstorms so that every thing is *too* wet, we want the surplus water to run away as soon as possible in the surface ditches and channels we have prepared for it. The success of the dust mulch depends very much indeed on having your ground properly arranged, not only with *under* drains but *surface* drains, and then having all the hollows filled up where water might otherwise stand.

It is hot when the sunshine pours upon it, and there were days last summer when the leaves of all the succulent plants lay flat upon the ground, and even those of the bush beans hung wilted on their stalks; yet with an abundant supply of water having a strong pressure, and hose with which I could reach all parts of the garden, not a pint of water was used throughout that almost rainless summer. I had pursued the same course the two previous seasons to some extent, but my resolution had given way at times, with not beneficial results, I thought. Last summer I stood firm, and there was not a day when the roots of the plants were not in damp soil, and not a crop suffered serious disaster.

I had had a lesson which prepared me for dust mulch. The first season I worked my present garden I used the hose liberally, causing the ground to be well wetted when there was no rain. This required a good deal of time—for which I had to pay—to keep the ground moist; but the garden looked well and gave good promise.

Right here is the greatest objection to irrigation. I presume many a man, like myself, after he has got his tanks, piping, and engine ready to pump the water, has found out it cost

so much money to water thoroughly even a small area that he has given up using his expensive outfit. In the arid West this is all right; but suppose here in the East we go to a good deal of expense, and get our ground thoroughly irrigated just right. Well, if a thunder-shower should come up immediately afterward, our time and money may have been worse than thrown away; besides, I have never seen any sort of irrigating that was equal to a summer shower.

I was called away from home for about two weeks in July. The boy who was employed to sprinkle the garden did "sprinkle" it and nothing more, and I found every thing in it dead or nearly so. It did not recover. Examination showed that the constant wetting of the top soil had called out surface roots; nothing had penetrated to any considerable depth, and two weeks of neglect had brought inevitable ruin.

This comes right in line with the oft-repeated remark that, when you once commence watering, you must keep it up.

I had already come to believe in dust mulch when water was not available; I then came to believe in it without reservation.

I have already told, in the *Farm and Fireside* of February 1, how I plant tomatoes. These are given an extra depth, because the tomato sends out roots wherever the vine touches the earth. Other vegetables I plant, or transplant, in trenches of depth just sufficient so that they will be properly hilled up when the trenches are filled and the garden is level. Then with rake or cultivator I keep the soil to the depth of one or two inches finely pulverized between the rows, and, where possible, between the plants in the row. This dust is a perfect mulch. Moisture will rise through the soil until it reaches it, but will not evaporate through it to any considerable extent; no more will be lost in the hours of sunshine than will be replaced in the night. I have found that there is stored in the earth sufficient moisture to provide a constant supply, provided evaporation is checked a short distance from the surface. There was no time during the drouth of last summer—and it was a wonderfully dry summer in the East—when with the toe of my shoe I could not find moisture. This was a matter of astonishment to visitors when all the soil in the garden glowed white in the blazing sun.

Dust mulch requires much less labor than the hose or watering-pot, even when these can be readily used.

This is true. Unless there is a period so long between the showers that the weeds begin to be visible, by very careful examination (with your spectacles), there is nothing to be done after you have got the surface thoroughly raked over. It is really a very cheap and easy way to take care of a crop; but when a shower comes so as to make the least bit of crust, there must be no delay—every thing must stand aside while you go over the whole of your ground and fix the surface at exactly the proper time.

The mulch remains intact except when it rains or showers or when trodden; then the rake or cultivator must be applied as soon as possible after the soil gets into suitable condition. If this is delayed, rain (unless very heavy) will prove an actual injury. One day last summer there was a shower of just sufficient duration to beat down and saturate the mulch; a day passed without proper attention, and the next day the moisture-line was an inch lower than it had been. The effect of even a slight compacting of the soil is apparent in the early morning. There were many weeks in which the track of a cat could be followed by the dark spots amid the surrounding whiteness, showing that the moisture had risen in her footsteps. So important did I come to consider the inviolableness of the mulch, that, whenever I entered the garden to gather vegetables, or for any other purpose, I raked out my tracks as carefully as if to conceal a depredation.

In my choice ground, among choice high-

priced plants, I have done this very thing—taken a fine rake and smoothed over where I or somebody else had been walking; but I did not know that anybody else had ever thought of being so particular.

The entire absence of weeds is one of the by-products of this system of culture, but of minor importance to my mind. It is rather pleasant, though, to look over even a small garden and see no sign of unproductive vegetation. The owner gets credit, too, for industry which he does not deserve, but which it is pleasant to receive. "Not a weed!" exclaimed a friend; "how your back must have ached!" In fact, I had not stooped since planting-time.

As I remarked to the careful reader of the *Farm and Fireside*, this is an old, old story. I was gratified last June, while passing through Pennsylvania from Philadelphia to Harrisburg, to see the dust-mulch theory applied in practice in that splendid farming region. The weather was very hot, and the yellow soil seemed hopelessly dry; but between the long rows of corn, showing only an inch or two above ground, were cultivators of all sorts throwing up clouds of dust. A few days later I returned in the wake of heavy showers; an increased number of men were toiling over the same fields, pulverizing the moist earth before it should have time to bake. I concluded that, wet or dry, there would be little shortage of corn in those valleys, and I realized as never before the incalculable value of experimental farming and the broad influence of the intelligently conducted agricultural press.

S. CUSHMAN CALDWELL.

Permit me to add I have never tried any method of cultivation that made things grow as does this dust mulch; and I believe a pretty good crop might be secured on poor ground, if well underdrained, and worked up fine before planting, and then handle as above. Nothing has been said about the use of the modern weeders used by hand or horse power. But they are just the thing for this kind of business after you get your model garden started right. Now, if you do *not* handle acres in this way I would advise every one of our readers to test the matter thoroughly on a small plot of ground. Let the women-folks test it in their flower-beds. If followed out, there will never be any pulling of weeds at all, because no weeds ever get in sight.

There is one place where we find a daily watering with the hose works very well—that is, for cabbage, tomato, and other vegetable-plants. When we get behind on orders, and it does not rain, we sprinkle the plants every evening; and as soon as the ground is dry enough, we work the surface with hand weeders. This hurries them along, and enables us to meet the demand. When the plants are very small, just after transplanting, we shade them toward the middle of the day, providing the sun is very hot.

SCARLET OR CRIMSON CLOVER IN WEST VIRGINIA.

I notice some of the friends complain of scarlet clover. I bought two bushels of you in 1897; sowed it in corn the last working, spring of 1898, June 5 to 10; plowed under what would have made at least two tons of hay per acre, and sowed to buckwheat July 12th (seeded itself). June, 1899, I again plowed under another big crop, and again sowed to buckwheat; seeded itself again, and to-day there is a fine set of clover, all from one sowing.

J. L. MCKENZIE.

Howesville, W. Va., April 15.

I take it, friend M., that you let your clover stand until some of the seed was ripe. With us it generally blossoms in the middle of May. By the date you mention there would be quite a good lot of seed. You certainly ought to have had a big crop of buckwheat if you

plowed under all of that clover, seed and all. I suppose the clover and buckwheat came up together; then as soon as the buckwheat comes off the ground, crimson clover has full swing; and my impression is, crimson clover and buckwheat go well together any way, and it gives the bee-keeper two honey crops in one season, and both crops are valuable besides the honey. The clover is so much slower in starting than the buckwheat that it does not do it very much harm. We sowed the two together last season, but we were so late about it the buckwheat was killed by frost. The crimson clover stood our recent severe winter beautifully. We usually plow it under for potatoes when it is fairly in full bloom, and always get a crop. As far north as we are, however, the sooner you can get the clover in after August 1, the bigger will be your stand of clover.

BIRDS AND FLOWERS.

I am not succeeding with that little greenhouse during this hot dry weather as well as I should like to. Even with plenty of water and shade, many of the plants fail to thrive. The pelargoniums are still "a thing of beauty and a joy for ever," and I sometimes feel like saying, doubtless God might have made a more beautiful plant than the pelargonium, but doubtless he never did. These beautiful flowers bud and blossom right along under all kinds of circumstances. Even if they get pot-bound, and when they are neglected, they seldom wilt. The Bride is still my favorite, although we have now larger plants and with larger blossoms. My thirty different kinds of Tom Thumb nasturtiums are now just masses of bloom. Some of them are not very much Tom Thumb, though, after all. They are running up strings clear to the top of the greenhouse. The ivy geraniums grow like the pelargoniums, and give beautiful masses of bloom with very little time or labor.

We have hardly had a summer shower this season. When we do have rain it turns off cold; and as a consequence our plants outdoors are not doing very well. The red spider is getting into the greenhouse, and has very much injured our roses and salvias. I am waiting for a rain so I can put the plants outdoors. Of course, we have plenty of water from the hydrants; but it is so strongly impregnated with soda it makes the plants have a sort of alkaline look that we see in the western plains. Rain water is the best water in the world, and the best way in the world to apply it is as it comes sprinkling from the clouds. The dust mulch mentioned in another column is all right after we once get the plants started and get the roots down into the damp ground.

But now I wish to tell you something else I enjoy about as much as I do the flowers. I am generally out in the greenhouse between five and six in the morning. The rest of the people in our neighborhood are not up at this time, and so I have every thing to myself, or pretty much so. Well, some little time ago a beautiful little hummingbird got around about the same time I did. At first he was very shy,

and kept off in the further part of the greenhouse; but when he found I seemed friendly he kept coming closer and closer; and now he will occasionally alight to rest within a few feet of my face. I have told you about the thrills that I get from a beautiful flower. Well, this little stranger, with his bright eyes and his green and gold costume—a costume fashioned and painted by the finger of the great God above—this gorgeous little fellow gives me again and again these same thrills. While drinking in the nectar he rests poised in the air as steady and still as if supported by an iron pedestal; and, what is more wonderful, one morning when there was quite a breeze I was astonished to find that he rested in mid air just as still and rigid as when the air was perfectly quiet. Now, what a marvelous thing is this! We admire the skill of man in bringing out wonderful machines; but this tiny bird not only maintains a stationary position in the soft yielding air while he drinks the nectar, but he maintains it just the same, even during a breeze that shakes the flowers and foliage all about him, and he does it involuntarily. He does not seem to know that he is performing one of the most difficult feats in aeronautics. The scientific world is now devoting considerable time and money in developing flying-machines—or rather, perhaps, we should call them gliding-machines. When we get a gliding-machine so a man can sail from the hilltops into the valleys, as a hawk sails on stationary wing, the principal difficulty with flying-machines will have been gotten over. So far the result has been that one inventor after another has lost his life by a capsize of the machine. But this tiny hummingbird masters the whole thing as simply and easily and *unconsciously* as you would stand on your feet. I wonder if these great inventors have studied the hummingbird. Does anybody in this whole wide world understand *how* this bird ties up his little bark anywhere at any time and at any moment, with not a thing to rest on, and even in spite of a brisk wind?

During our recent warm moonlight nights Mrs. Root has been kept awake between twelve and one o'clock by some song bird. We have not decided whether it is a mocking-bird or a redbird. Our night watchman has spoken of it. I have kept awake once or twice long enough to get a thrill of joy from his wondrous melody. One morning, about the time of this musical treat, I saw a bird standing on the stand by the cistern pump. He evidently was looking for a drop or two of water. This bird was more gorgeously attired than the hummingbird, if possible. It was one of the species of redbirds that might be gladdening our homes with songs and with their beautiful plumage, were it not for the wholesale slaughter to get them to plume the ladies' bonnets or to keep them caged up. And this opens the way for me to introduce to you a friend of mine whom God has called, not only to plead sor, but to *enforce the law* in behalf of, our feathered songsters.

The letter illustrates two things: First, how unlike is humanity! One man feels called in

one direction, and another in another, and so on; and the result is that every bit of animated nature seems to have *some one* called on to defend it.

Dear Brother Root:—Inclosed find clipping from the *Sidney Daily News*, which will give you an idea of the fight on hand.

REDBIRDS RELEASED.

"J. M. Fletcher, who lives north of Sidney, came in this morning and asked permission of the mayor to go about the city with the intention of causing all the redbirds in captivity to be liberated. His request was granted, and in company of one of the police he went to several places and caused over twenty birds to be set free. There is a State law against capturing and caging redbirds, and Mr. Fletcher says that he will see that it is enforced. The penalty for its violation is a fine of from \$25 to \$100."

I have witnessed much cruelty by the bird-trappers, who for years have been doing their infamous work, catching the old birds and leaving the young to perish in the nest, then *shipping* the birds to cities; then as the old ones call in plaintive notes for their young left behind, the cruel owners call that *sweet singing!* Now, with a determination to cause that curse to cease in our State, I started out, and in two days have caused 29 birds to be released, and more to follow. As the fight has just commenced, will you please give me your moral support through GLEANINGS? I expect the fight to continue until every native song bird in Ohio is released. I am threatened with shooting, etc., "but none of these things move me." If you have a personal acquaintance with publishers of agricultural papers and *Youth's Companion*, for pity's sake get them enlisted in the fight. Then as I go from city to city or county to county the notice of the work will make the release easier. I shall ask *no person for material aid*, but pay my own attorneys out of my own pocket; and lest some impostor should call on you and represent that he was the man doing the work, and wanted a little money to help, I send my photograph. Some of the poor birds had been caged for twelve years; and the joy on being released was enough to move the heart of any person, and ought to have been witnessed by every child in the land. I am working for no reward but from Him who said, "Not a sparrow falls to the ground without your Father's notice." Sydney, O., May 21. J. M. FLETCHER.

Permit me, in closing, to beg our agricultural papers, the *Youth's Companion*, and all others who are working for the love of humanity, and the building up of every thing around our homes that is good and pure and beautiful, to lend a hand and give friend Fletcher the backing and encouragement that he rightly deserves. Our experiment stations in the different parts of the United States have been doing a noble work in this direction. Many of the birds that have been pronounced enemies of the farmer are now unmistakably proven to be friends; and the fearful destruction that we all have witnessed in the way of noxious insects of late shows this is the result largely, without question, of the killing off of the birds. Somebody has said if all the birds were destroyed we should have a famine in five years worse than any thing the world has ever known; and my impression is that there is at least some truth in it.

In regard to caged birds, I rarely ever see one without a feeling of pain. My daughter, Mrs. Calvert, once had a canary bird that flew all around the house when the door was left open, and it was about the happiest canary I ever knew. Something happened to it before very long, but I do not remember what. But I suppose this way of keeping birds is seldom practicable. The law against caging our native birds is, I think, a just and humane one.

GROWING GRAND RAPIDS LETTUCE, BY ONE WHO STARTED OUT ON HIS OWN HOOK.

Mr. Root:—Nine years ago, after reading your high-pressure-gardening notes, we concluded to build a small greenhouse. The first one we built was 20x100 inside. We had good luck from the start. Our trade increased so we have been building more each year. We have at present $\frac{1}{2}$ acre under glass, and are short of lettuce most of the time.

The center bed in the photo is 8x200, and holds 2700 plants. We have several times cut 2000 lbs. at one crop from this bed. We burn natural gas, use a 20-horse boiler. There are in this house four steam-pipes, one overhead and one under each bed.

Now, I think our friend Thomas Slack's plan of a lettuce-house a good one, and I intend building on the same plan.

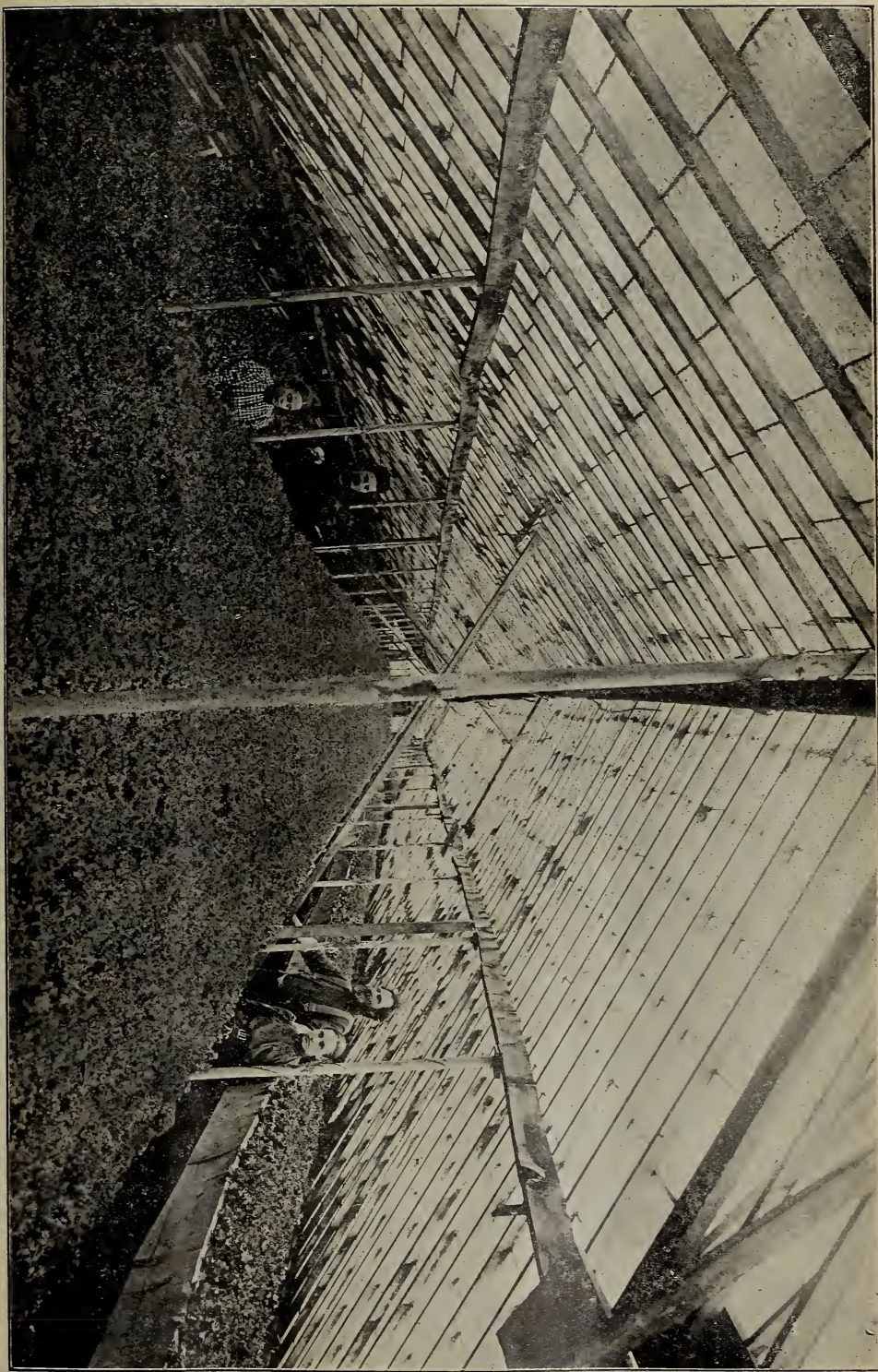
It would be very hard to explain the secret of raising lettuce under glass. Experience is the best teacher, although in some cases it might be very dear. In my opinion, good soil, good seed, good plants, and strict attention, is the secret in growing nice lettuce. Then let me add good tobacco dust, for we could do nothing without it. We find it the best and cheapest of any thing for killing all kinds of insects.

You ask about the children, so I will tell you; but my daughter says you won't care about them.

Our boy Clinton is 16 years old, over 6 feet tall without his shoes. He plays in the greenhouse when not in school. The little girl by him is an orphan, who lives with one of our neighbors. Mabel, our baby, is 14 years old; plays the piano, delivers lettuce, rides a wheel, and does house work. E. M. MILLER.

Bradford, Pa., May 17.

There are several valuable lessons to be gathered from the picture and description. First, my talks on high-pressure gardening have, at least in this one case, borne good fruit; but I am inclined to think our veteran friend, whose picture we see standing in the greenhouse, with both coat and vest off, has considerable vim and hard work in his make-up. He says he is out of lettuce most of the time. That has been my experience ever since I got the Grand Rapids lettuce craze. But other cares have prevented me from enlarging as I have many times desired to do. It strikes me that friend Miller has grown some enormous crops. I wish he would tell us just how he fixes his beds—manure, soil, etc. I have frequently grown plants, under favorable circumstances, that weighed a pound each; but he speaks of getting 2000 lbs. of lettuce from 2700 plants. I wish other lettuce-growers would tell us if this is not a little remarkable. In our locality, the one crop from this one bed would bring 10 cts. per lb. Just think of it, friends! \$200 for a single crop (three crops can be grown in a season) from a single bed 8x200 feet! I wish friend Miller would also tell us what his greenhouse cost him. I judge from the picture that it is rather cheaply gotten up, and that he has not used very high-priced lumber. I am glad to see his supports are all iron gas-pipes. If I ever build any more greenhouses, every thing that goes into the ground shall be iron. Of course, wood is nicer to nail to; but you can fasten the wood to the iron pipes after they get above ground. I judge, too, that his heating arrangements are not very expensive. He is certainly fortunate in being in the region of natural gas, and there is no nicer way to keep a greenhouse warm during severe winter weather than natural gas. Lettuce will stand considerable cold; and I have sometimes thought there was more danger, especially with a green hand, from letting the house be-



E. M. MILLER'S LETTUCE-HOUSE FOR GROWING GRAND RAPIDS LETTUCE, BRADFORD, PA.

come too warm than letting it become too cold.

Yes, indeed, it is hard to explain on paper the secret of growing lettuce under glass.

Some of us have recently discovered there is such a thing as good tobacco dust and poor tobacco dust. You can test the quality very easily by taking a handful out of the bag and holding it up to your nose.

I shouldn't wonder if that 16-year-old boy deserves considerable credit. His long arms (and legs) will help amazingly toward reaching in the middle of that 8-foot bed; and I shouldn't wonder if the two girls could help "right smart" in an emergency, in the handling of lettuce-plants.

Well, friends, this little home picture did me lots of good, and I presume it will do you lots of good. During the disagreeable stormy weather of winter, how nice it is to get indoors to work in a comfortable greenhouse after having been out in the storm to take care of property that requires a certain amount of outdoor work!

TRUE GRAND RAPIDS LETTUCE; WHAT SHOULD IT BE LIKE?

I am testing Grand Rapids lettuce from various seedsmen, and am sending for some of that lot that you got from California to test. I should like to see an article in next GLEANINGS giving the characteristics that identify that lettuce from other varieties of the plant, such as black-seeded Simpson, from which Grand Rapids is said to have originated. You or Mr. Thomas Slack might describe the Grand Rapids that he would consider worth an extra price.

Leavenworth, Kan., Apr. 28.

D. C. COLEMAN.

We at once forwarded the above to friend Slack and Eugene Davis. Mr. Slack replies as follows:

A. I. Root:—I can pick out a good strain of Grand Rapids lettuce a good deal better when I see it growing than I can describe it on paper. For forcing in a greenhouse, the most important difference between Grand Rapids lettuce and black-seeded Simpson is that the latter is not good for that purpose, as it will sometimes rot before it gets to its full growth, and ripen, as we call it—that is, bleach white and crisp by being so crowded that the light is excluded.

In color, Grand Rapids is a bright yellowish green, and thin leaf. Black-seeded Simpson is of a much darker green, and coarser. A sport is much more noticeable in the Grand Rapids on this account, and so far as I have had any experience, are a good deal more frequent. The leaves of Grand Rapids are more rough or blistered and frilled or fluted at the edges than black seeded Simpson, and never try to make a head, as the latter does occasionally without any marked success.

Looking down on a lot of black-seeded Simpson when well grown, each plant looks to me a good deal in shape more like a rose than Grand Rapids, as the leaves seem to cling together as if trying to make a head, and yet roll back or outward at the tips. The California seed you have makes a very pretty lot of lettuce, almost perfect in color and shape, with very few sports, most of which can be seen and removed from the small plants before setting in the bed; but I am a little afraid of it yet, and hope I may be mistaken in thinking that the quality for forcing can not be kept up, grown in that climate. Ours has sunburned a good deal, but it may be from too much bright sun, or perhaps a little carelessness in letting the temperature run too high after a few cloudy days. In Segane's house, which I visited on the 3d, with the house white-washed it was all right.

Waterloo, P. Q., May 7.

THOS. SLACK.

THE CANCER WORM, AND ITS RAVAGES IN OHIO.

Our Ohio Experiment Station has sent out a press bulletin advising everybody to look out

for the canker worm, or "measuring worm," as they are commonly called. From 4 to 6 ounces of Paris green mixed with 4 to 6 lbs. of slacked lime in 50 gallons of water, applied with a spray-pump, winds them up completely—that is, if you use the poison promptly while the worms are small. If you wait till they get to be full grown it takes a much larger lot of poison to do the work. If they get so large the Paris green may not kill them.

There is another remedy described as follows in the station report:

At this stage, however, it may be destroyed by spraying with Swift's arsenate of lead, Bowker's arsenic lead or Bowker's disparine, using three ounces of the preparation to fifty gallons of water. These mixtures will not injure the foliage. When fully prepared they have a milky-white appearance, and, being nearly as thin as water, they spray readily, and they adhere for several weeks, thereby avoiding the necessity for more than a single application. They may be obtained of Swift & Co., or Bowker Chemical Co., both of Boston, Mass.

If treatment is neglected, the worms will increase in numbers, and by another season will probably kill the trees.

The canker worm is worse this season, probably, because of the prolonged drouth in May.



TOBACCO, AND ITS INFLUENCE ON HEALTH.

I do not know but some of my good friends think I am a little cranky on the subject of tobacco; and I confess that, when I see how universal is the use of it, I sometimes wonder whether it is just right and proper to wage such unceasing warfare against it as I do; but the following letter, which has just been put in my hand, will, I think, present the matter from a standpoint that will convince you I am largely if not altogether in the right:

Friend A. I. Root:—It has been just two months since I have read anything in GLEANINGS. I will tell you something about it. I have been a user of tobacco for 40 years. Finally, about two months ago, I got so I could not see to read any thing in the papers; so I went to Saginaw to see a specialist, and he told me unless I quit using tobacco I would be stone blind in six months. Well, I quit using it, and have not used any since. I can now begin to see a little again. You can imagine how good it is to read a little in GLEANINGS once more.

Luce, Mich., May 18.

WM. CRAIG.

Some of you may say this is a solitary instance, comparatively; and you may urge that the man probably used tobacco in great excess. Permit me to say we have had one case almost exactly like the above here in our country. A man discovered he was losing his sight, and one day, while out in the fields, he became blind to such an extent he could hardly see to get home. It kept getting worse, until somebody suggested he stop using tobacco. The trouble ceased almost at once; but of course he had a fierce conflict with the old craving appetite. After the blind spells had disappeared entirely he ventured to try a little tobacco once more; but his blindness came back promptly, and it was a question of darkness with tobacco or from "darkness into light"

and *no* tobacco. Now, my good friend, if you are using tobacco, and are having troubles of any kind that puzzle you, cut off the tobacco and watch for the result. I do not wish to *dictate* to anybody what he shall eat or drink; but I would gladly lead any soul out of darkness into light; and especially when it comes along the line of securing good health. I have put this little talk under the head of Health Notes, as you see, and I think it is just where it belongs, does it not?

SOMETHING MORE ABOUT CIGARETTES.

On page 409 of our last issue I quoted what the Chief of the Weather Bureau said about cigarettes. Here is something further, clipped from the *Cleveland Press*. The occasion was a meeting of those having charge of reformatory institutions for boys; and from the minutes of the meeting we take the following:

The section on reformatories and industrial schools was addressed by Geo. Torrance, of Pontiac, Ill., superintendent of the Illinois State Reformatory, on "The Relation of the Cigarette to Crime."

Torrance said, "I am sure cigarettes are destroying and making criminals of more boys than the saloons." In his reformatory there are 278 boys, of whom 256 are cigarette-smokers, he said—92 per cent.

"Making criminals of more boys than the saloons." But as one of the chief promoters of tobacco are the saloons themselves, there still remains but little to their credit.

FROM ONE OF WELTMER'S VICTIMS.

I have been taking great interest in reading *GLEANINGS*, and especially what you say of Weltmerism. Well, Bro. R., I believe you are right as to what you say about him and his works. I have just finished taking a \$5.00 treatment from him; and the biggest thing I found in it was that he got my five dollars. I was just the same at the end of the treatment as I was at the beginning.

CHAS. S. FISHER.

Faith, N. C., May 23.

TEMPERANCE LEGISLATION.

United States Senator Foraker has finally been obliged by the temperance people to come out publicly through the papers, and acknowledge, in effect, that he used his influence to defeat the Clark local-option bill in Ohio. This is what he says:

But however this may be I had nothing to do with the defeat of the Clark bill except to give my opinion as above indicated when called upon for it. If this contributed to that end, I am glad to know that I am entitled to a small share of the credit.

He not only admits this, but he says he is "glad" that the bill was defeated. In other words, he is glad the brewers and saloon-keepers still have the privilege of planting saloons in localities and precincts where they are not wanted, and even where there would be an overwhelming vote against them if the people were permitted to settle the matter by ballot. Although Senator Hanna has not admitted this quite so fully as has Foraker, he has not undertaken to deny the charge that he did say there must not be any temperance legislation at present in Ohio. These two Senators well knew a majority of the people are in favor of this very just and fair temperance law. We are in the habit of calling this land of ours a "land of liberty," and a land governed by the people. Now, if we continue

supporting such men as Foraker and Hanna, and letting the power to do these things remain in their hands, how long can we truthfully claim to be a free people? They are learning of late (when we succeed in passing temperance laws in *spite* of them) to resort to the "nullification act" as it has been termed, and then pretend they did not know what the people wanted. Is it really true that the traffickers in whisky and beer are to rule, when the temperance people—the righteous and God-fearing people—outnumber them two to one?

KIND WORDS FROM OUR CUSTOMERS.

GLEANINGS grows better and better. Herewith is something to keep 'er coming, short or long spelling. Brownington, Mo., Mar. 24. E. F. NALL.

I am glad to see that you are opposed to saloons. We voted the saloon-keepers out of business long ago. Leesburg, Fla., Apr. 30. J. A. DAVID.

Inclosed find \$3.00, subscription in full. Please continue the valuable old journal. A. I. R.'s Home talks, and the interest he takes in exposing frauds is worth five times the price of it to me. F. A. WHAN. Raymilton, Pa., Apr. 20.

Oh! by the way, the four queens I got of you last summer are daisies, and all fine families, and great layers and workers. I must say that the A B C of Bee Culture beats them all. I received it with the other supplies from Bell Branch. I would not take \$20.00 for it if I could not get another. C. S. INGALS. Morenci, Mich.

The supplies I ordered of you came to hand all right, and I must say I never saw any thing so complete. To say I am pleased does not half express my feelings. I want to thank you for your very kind and thorough manner of doing business and sending out supplies, and to assure you it is a pleasure to do business with such a firm. M. C. FULLER. Stranger, Tex.

THE VALUE OF THE DOVE-TAILED HIVE.

We never before realized the real value of the Dove-tailed hive until within the past year or so, and we now desire to say that, for a general-purpose hive, they have no equal. They are easy to handle, can be tiered up any height, and, best of all, when you come to place your bees in the cellar it is not necessary to carry along a wagonload of lumber. Thus one can economize space, and winter a large number of colonies in a very small space. H. G. QUIRIN. Parkertown, Ohio, March 20.

OUR WATER-CURE PAMPHLET.

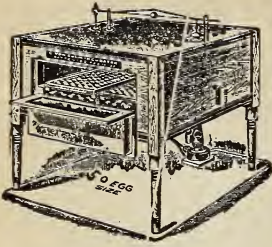
Bro. Root!—If you only knew how much good your water-cure pamphlets are doing you would be gratified. Of course, you make no demand of postage, but I can not accept such an offer, though I do not charge even postage to those to whom I give them. Grafton, N. Y., Apr. 3. REV. J. K. WAGER.

[Friend W., the satisfaction of knowing that this information saves life, and does good, is all the compensation we want. The little pamphlets were printed by the thousands, therefore the expense to us is very small. We are still ready to furnish one or more to anybody who wishes to distribute them among suffering humanity.]

Friend Root!—It is a pleasure to me to note that in many articles, especially seeds, you are evidently trying to see how much you can give for a small sum of money, while some people seem to try how much money they can get for a small quantity of their wares. A short time ago I sent to you for an ounce each of lettuce and two kinds of radishes at 5 cts. per ounce; also some peas. Counting the postage, these ounce packages cost me just about 5½ cts. each, and I find that each package contains what would make about six and some probably eight packages the size of those for which we usually pay 5 cts.

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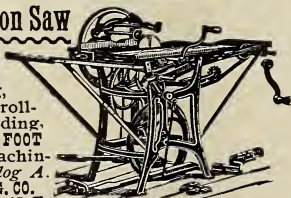
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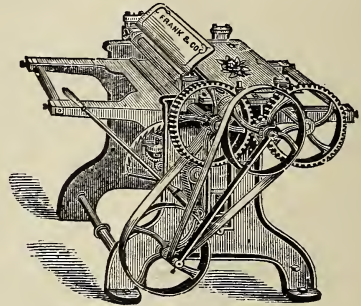
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